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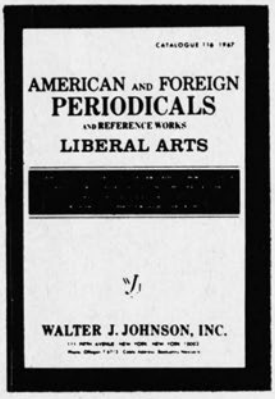

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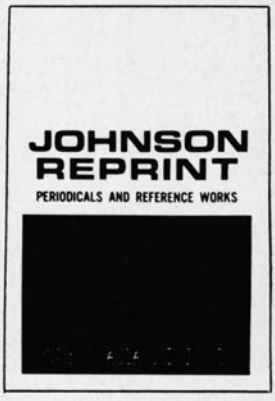

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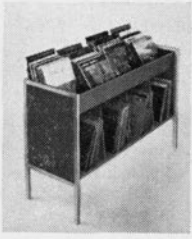

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DAN BERGEN

The Communication System of the Social Sciences

Traditionally, bibliographic communication in the social sciences has been viewed in descriptive or taxonomic terms. It seems possible to construct an abstract theoretical scheme within which such formal or bibliographic communication may be seen in relation to informal information exchange. The communication system thus conceived comprehends both formal and informal dimensions of social science communication. The ultimate rationalization of social science communication is dependent on the negative feedback that promotes the equilibrium of this system.

In the early 1930's, Douglas Waples of the graduate library school at the University of Chicago and C. Seymour Thompson, assistant librarian of the University of Pennsylvania, engaged in a most interesting debate over the possibility, indeed the desirability, of constructing a legitimate library science. The very character of that debate is instructive since it represents a benchmark against which one can measure the evolution of librarianship over the past thirty-five years. Professor Waples, as one might anticipate, was the exponent of scientific method and of the development of intellectual foundations for librarianship through its application. But Waples was more Baconian than Einsteinean, less the devotee of deductively formulated theory than of the formulation of generalizations by induction from systemic empirical studies. Thompson, on the other hand, viewed librarianship as a "Fine Art."[1] It is perhaps safe to suggest that now terms of an analogous debate might be quite different. Such a debate might now turn on the comparative utility of inductive empiricism and deductive theorizing as major methodological orientations in the development of a library science that could lay claim to liberation from the constraints of "natural history" modes of inquiry. It is within the context of this latter-day debate that the bibliographic organization of the social sciences can be most adequately surveyed.

It is one thing to be exclusively descriptive and taxonomic in an overview of social science bibliography. It is quite another matter to view problems of bibliographic access to social science knowledge conceptually in systemic terms. Whereas the former approach has been rendered less obsolete than inadequate of itself by research on scholarly communication, the refinement of systems theory in the social and natural sciences has made the latter approach remarkably useful.[2] To be more specific, it seems possible to view the array of bibliographic devices developed to provide access to social science knowledge as a constituting subsystem of the larger communication system in social science. Bibliographic communication may then be seen as the formal component of a larger system of communication which also

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NOTE: Footnotes for this article follow the text, beginning on page 249.

has an informal dimension, or subsystem, representing the interrelated set of channels for the more personal exchange of knowledge. Figure 1 shows the relationship of interaction which prevails between the bibliographic and personal exchange subsystems of the communication system of the social sciences.

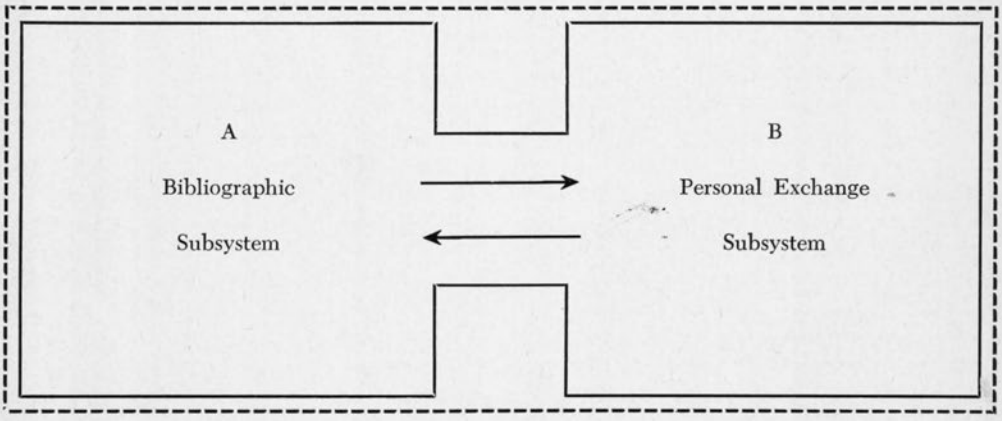
The reverse arrows are meant to suggest this interaction and, by extension, the mutually causal relationship between subsystems A and B. The larger system C can, therefore, be conceived as a feedback system in which the structure and function of B affects A while A influences B, either simultaneously or alternately. The relationship of subsystems A and B cannot, as a consequence, be linearly causal, but must be circular in character with the structure and function of A governed by feedback from B regarding its structural-functional response to some initial state of subsystem A or vice versa. For system C to move toward a state of equilibrium or optimization with respect to its internal arrangements, the feedback prescribing change in both A and B must be negative.

The relationship of mutual causation within system C is, given rational goals for both subsystems, that of opposition; that is to say, if B varies directly with A, then A must vary inversely with B. In other words, if subsystem A has as its most reasonable goal bibliographic organization which takes into account the structure and function of subsystem B, then the goal of subsystem B, if the thrust of system C is to be toward equilibrium, must be an informal structure of communication whose channels perform functions which are not performed or, to be more accurate, not adequately performed by the bibliographic subsystem A.

In this model, the complete rationalization of the social science communication system obviously depends on total surveillance of each subsystem by the other or, put another way, on the flow of complete and accurate information between subsystems. It need hardly be observed that the intelligence needed by the designers of bibliographic devices and by the scholars who define the configuration and functions of the personal exchange subsystem, if system C is to reach and maintain internal equilibrium, is not yet available. As a result, this model of the social science communication system must, for the time being at least, be recognized as positing an ideal.

For the present, it is more realistic to believe that the "managers" of subsystem A, typically librarians, scholars, publishers, or some coalition thereof, operate on incomplete and occasionally inaccurate information regarding the ongoing

FIG. 1.—Subsystems of the Communication System of the Social Sciences.



structure and function of subsystem B, and that those who define the parameters and nodes or switching points in the informal networks of communication represented in subsystem B are constrained by a parallel shortage of information about the structure and function of subsystem A. The consequence of stunted information flow can be shifts in structure and function in either subsystem based on positive or amplifying feedback rather than on the dampening influence of negative feedback. The exchange of distorted or untruthful information could result for example, in the design and development of a bibliographic device or set of such devices incorporating communication functions which are more *properly* and *optimally* handled by the personal exchange subsystem.[3]

It is, of course, entirely possible bibliographically to formalize selected informal channels of communication and to loosen or informalize the bibliographic subsystem, as studies reported later in the article have already demonstrated. Great care should be exercised, however, in the selection of those elements in the bibliographic and personal exchange subsystems which are to be informalized and formalized respectively. In the first place, the informal channel or bibliographic mechanism selected for such reorientation, whether it be the exchange of unpublished papers made more universal through bibliographic acknowledgement of their existence or the personalization of formal bibliographic access through selective dissemination, must be seen in its functional context. Indeed, not only the means by which a given element in the communication system of social science is to be formalized, or informalized but the very selection of the element itself, if it is to be done on more than intuitive or partially scientific grounds, must be founded on an adequate understanding of the structure and function of the subsystem of which the element is *not* a part and of the structural-functional relationship of the element to the other elements in its own subsystem.

Secondly, if the communication system of the social sciences is even loosely articulated, and one has every right to expect something tighter than "looseness" in such a system, defined as it is by the sheer density of its social science knowledge exchange relative to its environment, a modification of one of its elements might well reverberate and cause adjustments, however slight, throughout the entire system. Only thorough knowledge of the communication system in social science would enable one to predict the scope and intensity of these adjustments even on a probabilistic basis. It is unlikely that the promoter of innovation in the social science communication system will have access, in the immediate future, to the kinds of information suggested above.

He does, however, have access to the arsenal of intellectual tools generated by the systems sciences, particularly operations research, for coping with organized complexity about which only limited information can be obtained. Chief among these are model-building and its extension, simulation. Also emerging are mathematically-based theories of inventory, allocation, queuing, sequencing, routing, replacement, competition, and search which are rooted in the exotically titled subfields of statistics—Bayesian statistics, Monte Carlo method, Markov and stochastic processes, Gaussian distribution, and the like.

It would be a mistake to regard the social science communication system as a closed system devoid of environing systems with which it can effect transactional relationships. It would likewise be incorrect to picture it, in enlarged perspective, as anything but a subsystem itself comprehended by a larger system. With regard to the first point, the social science communication system has interactional relationships with communica-

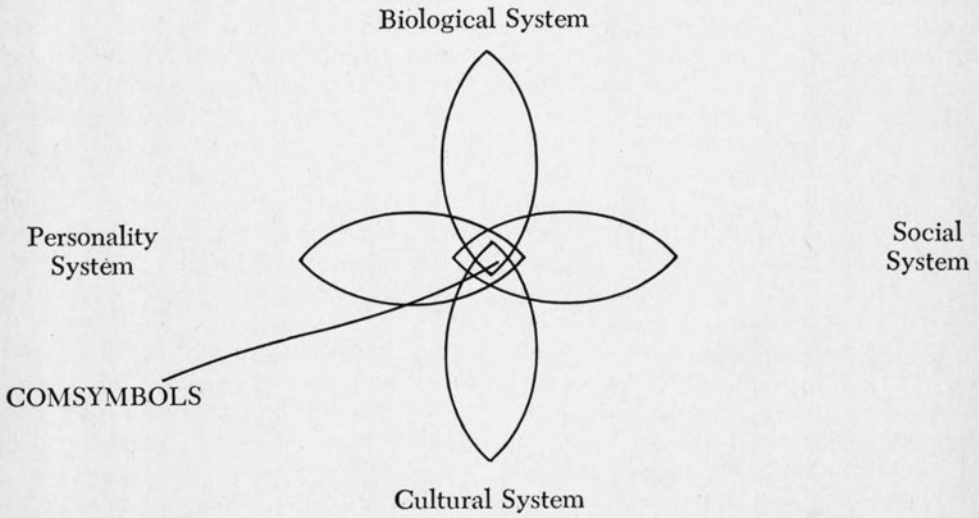
tion systems of the humanities, the physical sciences, the biological sciences, and technology. These relationships suggest that it is imperative to view scholarly communication as a complex, interacting whole, a suprasystem within which one can gain a holistic perspective on interdisciplinary intercourse. But the social science communication system may also be seen in hierarchical context as a subsystem of the social system of the social sciences which, in turn, is infused with the normative or value-prescriptive content of that vast cultural system which may be called the "world of learning."[4] The systems may be arranged horizontally in terms of interpenetration or interlock as well as hierarchically in terms of comprehensiveness.

Talcott Parsons, on whose systems theory the following discussion is based, has accepted the four-leaf-clover schematization[5] of interpenetrating systems presented in Figure 2. The area of overlap consists of those symbols shared by all systems but which have their genesis in the cultural system.

Parsons refers to the interrelated set of systems diagramed above as the culturally organized system of action. The cultural system, in this case the cultural subsystem of the world of learning, imparts to the social system, in this instance the social system of the social sciences, its overarching patterns of meaning as they are embodied in individual symbols and in complex sets of symbols. The norms, beliefs, and ideas of the cultural system are also transmitted to the personality system which, consisting as it does of learned cultural patterns, may be analytically distinguished from the biological system or physical organism itself.[6]

The center of action in the Parsonian scheme is the social system, in this context the social science social system (with its subsystem for communication which has heretofore been called the social science communication *system*), which mediates between that subsystem of the larger cultural system called the world of learning on one side and the personality and biological systems on the other.[7] The four systems, while decidedly interrelated, are analytically separable and each individual system has its own organization of elements, boundaries, boundary maintenance problems, and equilibrium tendencies. Social ac-

FIG. 2



tion is thus concretely defined by the various ways in which the four systems interpenetrate.

In order to gain insight into how the social science social system impinges upon the communication system of the social sciences and its bibliographic and personal exchange subsystems, it seems necessary to examine at least two of the fundamental problems with which social systems must cope if they are to reach a state of equilibrium. The first problem may be described as internal. The social science social system, if it is to become ordered and integrated, cannot, over the long term, run counter in over-all behavior to the needs, motives, and potentials of the persons occupying social roles within the system. In the perspective of this discussion, the social system of the social sciences would consist of those persons who, as academicians, practitioners, researchers, or students, have internalized at least some of the general norms of the world of learning (*e.g.*, that credit should go to those upon whose ideas and data one draws), as these norms have been modified or given a special formulation within the ethos of the social sciences, and who are at least minimally engaged in either study or research on a social science problem. The foregoing may be referred to as system integration or, more particularly, as the internal stability of the social science social system.

Secondly, the social system of social science, which generates a complex of norms relevant to its own special functions, cannot, again over the long term, vary radically from the norms of its appropriate cultural system, in this case the world of learning. Hence, the informing function of the cultural system cannot be frustrated within the social system for any great length of time if the social system is not to become dysfunctional.[8]

One of the important ways in which the world of learning, as a cultural subsystem, affects the normative structure of the social system of the social sciences is through the transmission of certain value propositions on which there is widespread academic consensus. One of the most powerful of these normative propositions is rationalism or the certification of knowledge based on what Parsons and Norman W. Storer have called the "shared structure of communicable thought which must underlie empirical argument."[9] The strength of this norm may be attributed, as Robert Merton has observed, to the rise of science and to the increasing importance of scientific methodology. It is this norm of rationalism that, to a very large extent, defines the structure of influence within the social science communication system.

A social scientist acquires influence when his academic peers judge his contributions to be rational and valid, not to mention original and reflective of some imaginative genius. Once a social scientist has established some influence, even his weaker publications tend to be received more favorably than they otherwise would be. Other scholars grow accustomed to citing his work, frequently in an attempt to acquire some of his prestige.[10] Indeed, the very frequency with which a small coterie of scholars is cited is at least partially reflective of the flow of influence in the social science communication system. This intellectual convergence on a group of key influentials also suggests something about the personal exchange subsystem of the social science communication system. One suspects that this influential minority of social scientists occupies the modal positions in the informal network of communication. The audiences to which these select scholars mediate the unpublished knowledge of the social sciences will determine, at least approximately, the boundaries of the personal exchange subsystem.

The academic cosmopolitans, most of

whom are connected with major universities having eminent graduate schools, are probably more theoretically oriented than social scientists generally and are perhaps more inclined to operate intellectually in the interstices between disciplines as well as within the bounds of their native field. The influence of theoreticians and scholars of interdisciplinary catholicity is not at all accidental. It is the concepts of the theoreticians which articulate and organize the empirical generalizations and data of social scientists with less range. It is the work of those with interdisciplinary inclinations which demonstrates the analogical suggestiveness of concepts born in a particular discipline for other fields. Much more, needless to say, must be known about the flow of influence in social science before its communication system can begin to be rationalized.

The message of the preceding discussion is that bibliographic services in the social sciences cannot be examined *in vacuo*. In the late 1940's, a distinguished University of Chicago committee, headed by Bernard Berelson of the graduate library school and Ralph W. Tyler of the division of social sciences, sought the advice of social scientists and librarians regarding lacunae in social science bibliography. Such an approach has some utility, to be sure, but only in the light of reasonably adequate knowledge of the functions performed by the bibliographic and personal exchange subsystems within the social science communication system can the outcomes of such opinion-seeking be meaningfully assessed. Such knowledge was not available to the investigators at Chicago nor is our knowledge of the structure and functioning of the social science communication system even at the present period anything like adequate.

Furthermore, there is a definite need for more knowledge of the ecology of the communication system itself. It has been suggested, for example, that methodological differences among the various social sciences strongly condition styles of information seeking and help to define which forms of publication will be most heavily used. Certain social science librarians in England, including Barbara Kyle, D. J. Foskett, and Peter R. Lewis, see methodological differences as crucial to the effective bibliographic organization of social science literature.[11] That there is some merit in the point of view would appear to be demonstrated in the following quotation from David Reisman.

> The historian sees the social scientist, in general, as an uncultivated person, without knowledge of, let alone reverence for, the past. His vulgarity appears in putting himself forward in what he writes—his often self-conscious effort to declare his own values, his own biases. In contrast to this the historian tends to minimize the role of his own self, of his own projectivity if not his selectivity, so that even a Collingwood, no *echt*-historian, is gingerly in handling a personal anecdote. (A nice example turned up the other day when a historian was talking to a seminar largely composed of sociologists. He told us how he had happened to study Latin-American cities and then apologized for the surely not tasteless revelation.) Moreover, the historian sees the anthropologist (and his allies among the *novi homines* of behavioral science) as able by grandiose or sexy talk to capture students and foundations, leaving historians to hold hands with professors of Greek; by the same token, anthropologists have the ear of governments, always flying to Washington or Micronesia, or advising market researchers-promoters rather than scholars. Yet there is an ambivalence in this disdain. These new men must have something. They talk a lot about methods—so much so that one of their number was recently heard to exclaim: "Oh, dear, why can't we just go out and *do* ethnography the way we used to." They know a lot of jargon which is villainous enough but impenetrable; they know about Rorschach tests, interviewing, and even sampling.[12]

Still, the above remarks are now over

a decade old. There is undoubtedly much more collaboration and rapprochement now between historians and more behaviorally oriented social scientists (especially sociologists, psychologists, and anthropologists) than there was at that time. And despite the persuasiveness of the "methodological differences" thesis, the writer is more inclined to look for methodological and conceptual isomorphism among the social sciences than to be swayed by the more seductive and obvious dissimilarities.[13] It seems likely that the behavior of a deductive theorist in sociology vis-a-vis the graphic record is more likely to resemble that of a deductive theorist in anthropology than that of a "barefoot" empiricist of his own disciplinary breed.

It seems possible, if this hypothesis is basically valid, at least to reduce methodological differences as defined by the different social science disciplines. This is possible if each discrete social science discipline is seen as possessing (1) its deductive theoreticians and philosophers who are not preoccupied with identifying the empirical correlates of their thought; (2) its empirical generalizers who seek to discover "laws" of limited range which accord with the results of empirical inquiry; and (3) its raw empiricists whose major concern is with fact gathering and who pay limited attention to the formulation of conceptual contexts within which their empirical results might find greater meaning. These epistemological categories are not constrained by the boundaries separating one academic field from another but cut across disciplinary lines and may ultimately suggest a great deal more about user behavior in the bibliographic subsystem, indeed the over-all communication system of the social sciences, than can a conception of methodological divergence defined by the disciplines themselves.

Much more will be known about this matter, it is hoped, after William D. Garvey completes his projected study of scholarly communication at Johns Hopkins University. This study will have a library or bibliographic dimension and will be comparative in the sense that it will note similarities and differences between the communication system in psychology, about which the American Psychological Association's studies have already revealed a great deal, and the communication arrangements in a physical science and another social science.[14]

One way of demonstrating conceptual interlock in the social sciences would be to trace the migration of abstract, organizationally potent theories (e.g., culture, entropy, indeterminancy) from their genesis in a particular social or physical science through their ultimate consumption and application in several different social science disciplines.[15] Such an approach, while hardly original, might well provide knowledge of considerable importance in the design of bibliographic devices. Arthur Lovejoy devoted much of his life to mapping the portability or analogical suggestiveness of "thoughts concerning particular aspects of common experience, implicit or explicit propositions, sacred formulas and catchwords, specific philosophic theorems, or the larger hypotheses, generalizations or methodological assumptions of the various sciences."[16] A similar approach has more recently been followed by several members of the Society for General Systems Research including Milton Marney, Frederick B. Wood, and the writer.

In like manner, those who seek greater economy in the transmission of knowledge have begun to identify broad-gauge concepts, thought models, or "representative ideas," many of which have cross-disciplinary relevance.[17] This latter approach, inspired largely by the research and research syntheses of Jerome Bruner and Jean Piaget, has been accompanied by attempts to reinterpret conceptually an entire aggregate of disciplines. Alfred Kuhn, to cite only one example, has

sought to interpret political science, sociology, and economics as an integrated whole through the application of fundamental, intellectual machine tool concepts like communication, transaction, and organization[18] to which he equates the three vital components of a cybernetic system, a detector, a selector, and an effector.[19]

Quite related to the foregoing are the studies of Derek John DeS. Price and Eugene Garfield on citation networks in the sciences, all of which have implications for studying the generation, organization, transmission, and consumption of knowledge in the social sciences. Price has employed the image of "knitting" to describe the texture or topography of citation networks in the cumulative sciences in contrast to the random, more entropic networks which he suggests are likely to exist in the humanities. Applied to the social sciences, citation network analysis, refined by qualitative information on just how a citation is employed by a citing source,[20] might permit more complete identification of key academic influentials and more complete knowledge of the different ways in which they are catalytic in the growth of knowledge within their own disciplines and the social sciences in general.[21] It would then be possible to compare the flow of influence and information in the bibliographic subsystem with parallel flows in the personal exchange subsystem of the communication system of the social sciences.[22] It could be hypothesized that within a social science communication system in equilibrium, some influentials may be best adapted to the structure and functions of the bibliographic subsystem while others will find it more suitable to exploit informal channels of communication; still others, perhaps a majority, will exercise equal influence in the two subsystems. It would also be interesting to observe the flow of information from *applied* social science to *basic* social science, as those two dimensions of any scientifically oriented discipline are currently, if somewhat vaguely, defined.[23]

The rapid growth of area studies[24] and multidisciplinary approaches to specific social problems provide excellent opportunities for identifying those concepts and influentials which seem to exercise hegemony in the intellectual open market of collaborative, yet competitive, interdisciplinary research. At all events, better knowledge of concept migration and the parallel flow of scholarly influence in the social sciences should contribute to the rationalization of the social science communication system and to the even more central intellectual task, crucial to the construction of a library science, of monitoring the generation, growth, and integration of all human knowledge.[25]

In a sense, much of the epistemological tension present in the modern social sciences may be traced to the influence of Europe; Simmel, Pareto, Freud, Weber, Durkheim, and others still exert influence in American social science. It should be recalled that the social sciences are themselves a consequence of the progressive evolution and differentiation of moral philosophy, a broad domain of inquiry which was, at least initially, largely speculative and normative in character. During the last quarter of the nineteenth century and the first quarter of the twentieth, however, the social sciences were introduced to the empirico-quantitative methods of the natural sciences with German social science showing the way.[26] In more recent decades, the social sciences have taken a further step by appropriating, so suggestive do they seem to be, some of the most deductively fertile concepts of the natural sciences, mechanism and organism during an earlier period, entropy, uncertainty, and more recently complementarity. Scholars in the social sciences who share the systems-communication orientation which incorporates a number

of natural science concepts are now displaying more optimism about the emergence of what Comte called a "social physics."[27]

Kenneth Boulding has made what seems to be an excellent distinction between modern scientific knowledge, increasingly encountered in the social sciences, and the folk knowledge which, even now, can be found in contemporary approaches to social problems. He writes:

> The fundamental difference between scientific knowledge and folk knowledge . . . is that folk knowledge is derived essentially from empirical inference and causal observation whereas scientific knowledge is derived from necessary inference from theoretical models according to mathematical logic and carefully organized observation guided by inventions which extend the power of the senses.[28]

Boulding cautions, however, that despite the scientific revolution in the social sciences, the "internal" insight of the humanist and the more normative speculations of the social philosopher should not be neglected as valuable and necessary complements to the efforts of the model builders and deductive theorists.[29]

To the writer, there is unquestionable utility in the quest to understand those epistemological problems which are shared in common by all of the social sciences. To do otherwise would be to deny that the rationalization of the social science communication system is ultimately dependent on the search for commonality. In the 1930's, Karl Mannheim reflected that European social science seemed concerned mainly with large-scale phenomena, with that sheer breadth of inquiry epitomized in the work of a man like Herbert Spencer, who as Paul F. Lazarsfeld recently put it, "concerned himself with development of all societies from beginning to end."[30]

American social science, at that time, appeared to Mannheim to be much more microscopic in its inquiry. Over thirty years later, there has undoubtedly been a rounding out of this picture on both sides of the Atlantic.[31] Both here and abroad, social science has its macroscopic dimension represented by the deductive theorists and social philosophers, and its microscopic orientation exemplified by the empirical generalizers and the fact gatherers.[32] The common epistemological problems existent at both of these levels of inquiry have been thoroughly, if over-pragmatically, discussed by Roylo Handy on the basis of his ten-year survey of the literature of the social sciences.[33]

From the standpoint of developing mechanisms of access to social science knowledge, it is the macroscopic component, with its attendant epistemological problems, which is of greatest importance. Because it is the macroscopic social scientists who dictate how empirical generalizations and data will be ordered, it is to the writings of men like Parsons, Boulding, Carl J. Friedrich, Herbert A. Simon, and Robert K. Merton, the Einsteins of modern social science, that those who would develop access to social science literature should turn.[34]

Having suggested some of the factors that need to be considered in any effort to rationalize the communication system of the social sciences, the writer would like to turn, at this point, to a consideration of the current bibliographic situation in the social sciences and to an assessment of the environment of that subsystem.

The librarians in the University of Chicago's survey of some two hundred users of the bibliographic apparatus of the social sciences regarded it as weaker than the bibliographic services then provided in the physical sciences, biological sciences, and humanities.[35] The social scientists surveyed shared this disenchantment, but differed with the librarians in their judgment of precisely what would be required to improve the situation.

The librarians, oriented basically to locating information for others rather than its actual consumption, wanted a comprehensive index to social science literature covering all, and perhaps more, as *Social Science Abstracts* once did, of the literature now covered in, say, *Psychological Abstracts, Sociological Abstracts, PAIS*, and what is now called the *Social Sciences and Humanities Index*. The social scientists, oriented on the other hand to the actual consumption of social science knowledge, sought abstracting services and bibliographic reviews.[36]

Fifteen years later, this tension between the location of literature and the consumption of the knowledge-content therein appears little attenuated in view of the results of a recent comprehensive survey of social science information centers completed by Jack Ferguson and his colleagues at Columbia University's Bureau of Applied Social Research.[37] A more limited and highly tentative survey of sixty research oriented economists, psychologists, and anthropologists sponsored by the *American Behavioral Scientist* also confirmed the social scientists' press for improved descriptive abstracting and for better, more multidimensional mechanisms of access to social science knowledge. This survey also showed, as evidenced by the response of the psychologists, who are now by no means alone in having to contend with a diffuse, hard-to-control report literature, that where a quality abstracting service exists, it is used.[38]

The experience of Patricia B. Knapp at Monteith College of Wayne State University tends also to reflect a scholar-librarian dichotomy. Professor Knapp observed that bibliographical devices—periodical indexes, catalogs, and the like—which are developed by scholars and their professional associations, were more oriented to concept and discipline and, at times, methodology. In the face of this evidence, however, doubt still exists about whether this is a legitimate dichotomy to make. Positing a continuum of bibliographic sources ranging *from* those providing broad literature coverage and low information provision *to* limited literature coverage accompanied by high density information provision, Professor Knapp suggests that the amount of knowledge an inquirer brings to his search will determine which end of the continuum he finds most useful.[39]

The writer would suggest, on the contrary, that the epistemological stance of the inquirer—macroscopic and deductive or microscopic and inductive—and the nature of the conceptual structures within which he organizes what he has already learned will be more influential in determining whether he will find the bibliographic devices of librarianship or scholarship most useful; or whether, indeed, he finds it indispensable to use both in combination. Many scholars who are oriented to the theoretical and interdisciplinary aspects of knowledge can, one might argue, both have their cake and eat it. Such scholars are inclined to depend heavily on books and articles by those with whom they share an epistemological orientation, the footnotes and bibliography therein permitting them simultaneously to optimize both their coverage of the literature (through insight regarding works which are analogically suggestive for their own work) and information provision (due to the shared epistemological perspective). Again, further inquiry in this area is certainly needed.

A good place to begin in any discussion of the problems of bibliographic access in the social sciences is with classification. Perhaps the most outstanding effort in this direction is the Kyle Classification (or KC) developed by Barbara Kyle at the request of the International Committee on Social Sciences Documentation. This is a faceted classification scheme based on an underlying notion of the hierarchical structure of organized social complexity, ranging from the in-

dividual up to large social organizations or systems. It employs two prime facets, Activities and Personalities, under which all other terms are organized. In the classification of a document, the Activities facet is employed before the Personalities facet. Activities are defined simply as those actions in which Personalities or groups engage.

The great advantage of this classification is that it is not based upon those man-imposed boundaries which separate disciplines, as different ways of looking at the same reality, from one another. One of its drawbacks, as Foskett has observed, is the occasional difficulty in determining whether a given entity is an activity or a personality.[40] A greater difficulty, in the judgment of the writer, is the scheme's inability to differentiate between those authors who discuss social organizations as if such systems are inherent in nature itself and those who write about social systems from a conceptual point of view or as simple constructs imposed upon a reluctant reality as an aid to understanding social behavior. Social scientists differ on this matter and the epistemological variation is reflected in the publications they produce.[41] As a consequence, any hierarchy of social organizations or systems will be confused and inconsistent if it does not in some way distinguish those sets of interacting entities which are defined by relatively perishable intellectual constructs and those which are conceived as immanent in nature.

More recently, Claude Levi-Strauss and Jean Piaget have presented interesting discussions bearing upon the relationship between epistemology and the organization of social science knowledge.[42]

Over fifteen years ago, the authors of the University of Chicago report on social science bibliography made three proposals for action. The most exciting of these proposals, the authors suggested, would take at least a generation to implement. That proposal was the complete rationalization of social science bibliography.[43] This article has tried to suggest that such rationalization, indeed the rationalization of the larger communication system in social science, need not forever remain a dream. ■■

NOTES

[1] See C. Seymour Thompson, "Do We Want a Library Science?," *Library Journal,* LVI (July 1931), 581-87; Douglas Waples, "Do We Want a Library Science: A Reply," *Library Journal,* LVI (September 15, 1931), 743-46; and Thompson, "Comment on the Reply," *Library Journal,* LVI (September 15, 1931), 746-47.

[2] In political science, for example, the systems orientation pervades Karl W. Deutsch, *The Nerves of Government: Models of Political Communication and Control* (New York: Free Press of Glencoe, 1963); David Easton, *A Systems Analysis of Political Life* (New York: Wiley, 1965); and Easton, *A Framework for Political Analysis* (Englewood Cliffs, N.J.: Prentice-Hall, 1965).

[3] In systems or operations research, the goal most typically sought is the optimization of system performance. See Russell L. Ackoff, *Scientific Method: Optimizing Applied Research Decisions* (New York: Wiley, 1962), especially Chapter 1, "The Nature of Science and Methodology," p. 1-29, and his "The Development and Nature of Operations Research and Its Relevance to Educational Media Research" (Mimeographed paper prepared for a conference on New Dimensions for Research in Educational Media Implied by the "Systems" Approach to Instruction, Center for Instructional Communication, Syracuse University, Syracuse, N.Y., April 2-4, 1964).

[4] My intellectual debt to Talcott Parsons will be obvious in the following paragraphs. It is my hope that this application of his systems theory will not do violence to it. It should be stated, moreover, that this is by no means the first utilization of Parsons' theory in connection with bibliographic problems. In 1952, Jesse H. Shera and Margaret E. Egan tentatively explored the relevance of his structural-functional approach as a means of conceptualizing the impact of knowledge on society in their "Foundations of a Theory of Bibliography," *Library Quarterly,* XXII (April 1952), 130-31.

[5] This scheme was developed by Charles Morris in Roy R. Grinker (ed.), *Toward a Unified Theory of Human Behavior* (New York: Basic Books, 1956), p. 351.

[6] The cultural system, defined originally by religion, differentiates over time in more modern societies into cultural subsystems based, in many instances, on the cultural content of the academic disciplines. These subsystems then interpenetrate one another within the confines of the over-all cultural system. For a discussion, see Parsons, "Social Systems and Subsystems" in David L. Sills (ed.) *International Encyclopedia of the Social Sciences* (New York: Free

Press of Glencoe, forthcoming). In the processed version of this article, the relevant pages are 36-37.

[7] Parsonian systems theory is elaborated in many books and articles. It is derived by and large, from a synthesis of the insights of Freud, Durkheim, Weber, Cooley, and Mead. See *ibid.*, p. 2-4.

[8] Alternatively, Parsons and Norman W. Storer have viewed the cultural and social systems respectively as (1) the world of learning and the university or college and as (2) an academic discipline and a specific teaching or research unit. Clearly, the systems described in (2) are subordinate to those described in (1). In these alternative schemes, the points of intersection between cultural and social systems are respectively (1) the academic profession and (2) a department. See Parsons and Storer, "Proposal for a Study of *The Academic Profession: Faculty Roles and Functions in American Colleges and Universities,*" (Cambridge, Mass.: Department of Social Relations, Harvard University, 1964). In the processed version, the relevant pages are 3-7. For a partial exposition of this matter, see Parsons, "Unity and Diversity in Modern Intellectual Disciplines: The Role of the Social Sciences," *Daedalus,* XCIV (Winter 1965), 39-65. As a level of analysis, the social system of the social sciences has been favored over the university or college *or* the specific teaching or research unit because the social science communication system itself cuts across the boundaries of educational, research, and professional organizations.

[9] Storer and Parsons, "The Disciplines as a Differentiating Force" in Dan Bergen (ed.), *The Foundations of Access to Knowledge* (Syracuse, N.Y.: School of Library Science, Syracuse University, forthcoming). The reference is to page 10 of the processed version of this essay. The sociology of science is apparently very much an "in" field these days. Storer himself has sought to apply systems perspectives to the social organization of science in his *The Social System of Science* (New York: Holt, Rinehart, and Winston, forthcoming). See also Norman Kaplan (ed.), *Science and Society* (Chicago: Rand-McNally, 1965), especially the sections on "Science as a Changing Institution" and "Prologue to the Future"; Warren O. Hagstrom, *The Scientific Community* (New York: Basic Books, 1965); Herbert Coblans, "The Communication of Information" in Maurice Goldsmith and Alan Mackay (ed.), *The Science of Science* (London: Souvenir Press, 1964); and Kaplan, "Sociology of Science" in Robert E. L. Faris (ed.), *Handbook of Modern Sociology* (Chicago: Rand-McNally, 1964), 852-81, especially "The Communications Systems in Science," p. 857-60.

[10] Kaplan, "The Norms of Citation Behavior: Prolegomena to the Footnote," *American Documentation,* XVI (July 1965), 181-82. For a more generalized picture of the notion of influence, see Parsons, "On the Concept of Influence," *Public Opinion Quarterly,* XXVIII (Spring 1963), 37-62.

[11] See Foskett, *Classification and Indexing in the Social Sciences* (Washington: Butterworth, 1963), especially Chapter 2, "The Data of the Social Sciences," p. 18-36.

[12] Riesman, "Some Observations on the 'Older' and the 'Newer' Social Sciences" in Leonard D. White (ed.), *The State of the Social Sciences* (Chicago: University of Chicago Press, 1956), p. 325-26. Riesman's observations do, of course, raise the question of history's inclusion in the social sciences. It is indeed a difficult field to categorize. Because of the scope and complexity of the systems with which it deals, most historians are reluctant to build theoretical models. When such models are built, the more modest claim of their heuristic value usually supersedes any claim to final explanation. There appears to be some tendency for younger historians to identify themselves as social scientists, while their older colleagues seem to gravitate more naturally toward the literary and humanistic aspects of the discipline. See Kenneth E. Boulding, *The Meaning of the Twentieth Century: The Great Transition* (New York: Harper, 1964), p. 54-55, and Robert H. Knapp, *The Origins of American Humanistic Scholars* (Englewood Cliffs, N.J.: Prentice-Hall, 1964), p. 157.

[13] In more macroscopic terms, Pierre Teilhard de Chardin has referred to the ultimate convergence of the mental system of humanity or the "omega point." See the introductory comments by Julian Huxley in his *The Phenomenon of Man* (New York: Harper, 1959), especially p. 13-14 and 17-18. While most observers would employ a differentiation model to explain the emergence of the discrete intellectual disciplines, a kind of reverse "epigenesis" can be employed in discussing their unification or re-fusion. See Amitai Etzioni, "The Epigenesis of Political Communities at the International Level," *American Journal of Sociology,* LXVIII (July 1963), 407-409.

[14] See Garvey, "An Interdisciplinary Project on the Behavioral Study of Scientific Communication" (Washington: American Psychological Association, 1965), processed, p. 6.

[15] The writer has dealt in a very tentative and elementary way with patterns of concept migration in "The Implications of General Systems Theory for Librarianship and Higher Education," a paper presented at the annual meeting of the Society for General Systems Research, annual convention of the American Association for the Advancement of Science, Berkeley, California, December 30, 1965.

[16] Maurice Mandelbaum, "The History of Ideas, Intellectual History, and the History of Philosophy" in John Passmore (ed.), *The Historiography of the History of Philosophy* (The Hague: Mouton, 1965), p. 35. Also of importance are the writings of Lovejoy himself including *The Great Chain of Being; A Study of the History of an Idea* (Cambridge, Mass.: Harvard University Press, 1936), and his "The Historiography of Ideas" in *Essays in the History of Ideas* (New York: Braziller, 1955), p. 1-13. Some of the methods of the modern social scientists who have studied the diffusion of information are also relevant here, even though most of their work has been concentrated on the diffusion of physical rather than conceptual units. See Everett M. Rogers, *Diffusion of Innovations* (New York: Free Press of Glencoe, 1962).

[17] Philip H. Phenix, *Realms of Meaning: A Philosophy of the Curriculum for General Education* (New York: McGraw-Hill, 1964), especially p. 323-26.

[18] See Kuhn, *The Study of Society: A Unified Approach* (Homewood, Ill.: Dorsey Press, 1963). A somewhat more archaic notion of social science unification based on the overarching quality of the concept of culture is presented in K. W. Kapp,

Towards a Science of Man in Society (The Hague: Martinus Nijhoff, 1961).

[19] Kuhn, "Systems Analysis as a Basis for Teaching Unified Social Science," a paper presented at the annual meeting of the Society for General Systems Research, annual convention of the American Association for the Advancement of Science, Berkeley, California, December 30, 1965. The reference, in the mimeographed version of the paper, is to pages 12-14.

[20] See Ben-Ami Lipetz, "Improvement of the Selectivity of Citation Indexes to Science Literature through the Inclusion of Citation Relationship Indicators," *American Documentation,* XVI (April 1965), 81-90.

[21] See, especially, Price, "Networks of Scientific Papers," *Science,* CXLIX (July 30, 1965), 510-15, and his "The Scientific Foundations of Science Policy," *Nature,* CCVI (April 17, 1965), 235. Garfield has even suggested, somewhat over-buoyantly it seems to me, that citation indexing to the literature of the social sciences would be preferable to the more archaic and frequently ambiguous subject headings typically found in more conventional indexes to such literature. This argument is based in large measure on Garfield's contention that each new citation, in effect, reindexes the source it cites in much the same manner in which a self-organizing system develops new goals and a new internal structure on an ongoing basis. See his "Citation Indexes in Sociological and Historical Research," *American Documentation,* XIV (October 1963), 289-91, and his "Citation Indexing: A Natural Science Literature Retrieval System for the Social Sciences," *American Behavioral Scientist,* VIII (June 1964), 59-61.

[22] It is the writer's intuition that informal influence may at times differ from bibliographic or formal influence as measured by citations. Very frequently, the author of a book or article will acknowledge the assistance of key individuals and the formative role they have played in the development of his manuscript. Such persons are not always cited in the footnotes of the completed publication. Other qualities, like verbal facility, appearance, personality, and the capacity for argumentation, are elements which may be supportive of the informal influence of an individual who, for some reason, is not yet in print with his ideas or data. Then there are always scholars whose really important work is, in their judgment, "never in final form" and who meet the "publish or perish" dicta of their own institutions with publications which by no means reflect the depth and insight of their unpublished or even unwritten reflections.

[23] See Thomas A. Cowan, "Decision Theory in Law, Science and Technology," *Science,* CXL (June 7, 1963), 1065-75, and his "What Law Can Do for Social Science" in William M. Evan (ed.), *Law and Sociology: Exploratory Essays* (New York: Free Press of Glencoe, 1962), p. 91-123.

[24] Chauncy D. Harris, "Area Studies and Library Resources," *Library Quarterly,* XXXV (October 1965), 210, 212-14.

[25] Vladimir Slamecka and the late Mortimer Taube saw the optimization of the total system of intellectual and conceptual relations as dependent upon information about how knowledge is actually developing operationally in their "Theoretical Principles of Information Organization in Librarianship," *Library Quarterly,* XXXIV (October 1964), especially pages 356-59. And Victor Yngve has foreseen the possibility of optimizing the paradigmatic, or *a priori*-conceptual of the SYNTOL (or Syntagmatic Organization Language) on the basis of a monitored feedback of information regarding the intellectual relations actually being expressed in documents. See J. C. Gardin, *SYNTOL* (New Brunswick, N.J.: Graduate School of Library Service, Rutgers—The State University, 1965), p. 95-96.

[26] See Jurgen Harbst, *The German Historical School in American Scholarship: A Study in the Transfer of Culture* (Ithaca, N.Y.: Cornell Univ. Press, 1965), p. 215-16, 219, 242.

[27] See, particularly, the discussion in Anatol Rapoport, *Fights, Games, and Debates* (Ann Arbor: Univ. of Michigan Press, 1960). Also Charles A. McClelland, "The Scientific Revolution and the Social Sciences," *General Systems,* VI (1961), 9-14; Rapoport, *Strategy and Conscience* (New York: Harper, 1964); Nicolas Rashevsky, *Mathematical Biology of Social Behavior* (Chicago: Univ. of Chicago Press, 1951); Rashevsky, *Mathematical Theory of Human Relations: An Approach to a Mathematical Biology of Social Phenomena* (Bloomington, Ind.: Principia Press, 1947); Lewis F. Richardson, *Arms and Insecurity: A Mathematical Study of the Causes and Origins of War* (Pittsburgh: Boxwood Press, 1960); Richardson, *Statistics of Deadly Quarrels* (Pittsburgh: Boxwood Press, 1960); George K. Zipf, *Human Behavior and the Principle of Least Effort: An Introduction to Human Ecology* (Cambridge, Mass.: Addison-Wesley, 1949); and Zipf, *National Unity and Disunity: The Nation as a Bio-Social Organism* (Bloomington, Ind.: Principia Press, 1941).

[28] Boulding, *op. cit.,* p. 55. See also, in this connection, Phenix's discussion of the method of theoretical science in his *op. cit.,* p. 101-102. An example of the relevance of mathematics to the social sciences is the application of Monte Carlo method to the study of queues or waiting lines in libraries or any other kind of service institution. This method, which is based on the notion of probability, has also been found useful vis-a-vis social phenomena on which it is impossible to experiment at first hand. See Abe Shuchman, "Queue Tips for Managers" in Shuchman (ed.), *Scientific Decision-Making in Business: Readings in Operations Research for Nonmathematicians* (New York: Holt, Rinehart and Winston, 1963), p. 291-92, 296-97, 300.

[29] Despite the acrimonious debate in social science between the theoreticians and philosophers and their more empirically oriented colleagues, see John C. Charlesworth (ed.), *Mathematics and the Social Sciences* (Philadelphia: American Academy of Political and Social Science, 1963); Evron M. Kirkpatrick, "The Impact of the Behavioral Approach on Theoretical Political Science" in Austin Ranney (ed.), *Essays in the Behavioral Study of Politics* (Urbana: Univ. of Illinois Press, 1962), p. 1-30, and Leo Strauss, "An Epilogue," in Herbert J. Storing (ed.), *Essays on the Scientific Study of Politics* (New York: Holt, Rinehart and Winston, 1962), p. 305-27, modern physical science itself is becoming increasingly agnostic about the validity of its own methods and more sensitive to its own unexamined and implicit assumptions, many of which rise out of the master matrices provided by philosophy and religion. As a result, scholars like Boulding cite the importance of introspection in the social sciences as a foil to the scientific social scientist's tendency to rely almost

exclusively on "external" observations. See his *op. cit.*, p. 58-60. It is interesting, finally, that Robert H. Knapp has empirically demonstrated that where the social sciences have strength in an American university so also, more often than not, do the humanities. The situation seems to be one of mutual support. See his *op. cit.*, p. 6-17.

[30] Lazarsfeld, "Philosophy of Science and Empirical Social Research" in Ernest Nagel, Patrick Suppes, and Alfred Tarski (eds.), *Logic, Methodology, and Philosophy of Science* (Stanford, Calif.: Stanford Univ. Press, 1962), p. 463.

[31] See Parsons, "Recent Trends in Structural-Functional Theory" in Earl W. Count and Gordon T. Bowles (eds.), *Fact and Theory in Social Science* (Syracuse, N.Y.: Syracuse University Press, 1964), p. 153.

[32] On this epistemological dichotomy, the comments of the late C. Wright Mills are enlightening, if somewhat macroscopically biased. See his "Two Styles of Social Science Research" in Irving Louis Horowitz (ed.), *Power, Politics, and People: The Collected Essays of C. Wright Mills* (New York: Oxford University Press, 1963), p. 554-66.

[33] Handy, *Methodology of the Behavioral Sciences: Problems and Controversies* (Springfield, Ill.: Charles C Thomas, 1964), especially p. 4-6, 20, and Chapter 2, "The Theoreticians and the Laboratorians," p. 22-51. See also, in this regard, the following provocative studies, especially the last, in which the author argues the controversial thesis that the concepts of the social sciences actually penetrate concrete social life itself thereby making predictions of social behavior at times self-fulfilling or self-defeating: Chapter 1, "Induction and Deduction in Science and Technology" (p. 1-31), Chapter 4, "Scholars, Scientists, and Philosophers" (p. 66-90), and Chapter 5, "In Conclusion" (p. 91-5) in James Bryant Conant, *Two Modes of Thought: My Encounters with Science and Education* (New York: Trident Press, 1964); F. S. C. Northrop, *The Logic of the Sciences and the Humanities* (New York: Macmillan, 1947); Abraham Kaplan, *The Conduct of Inquiry: Methodology for Behavioral Science* (San Francisco: Chandler, 1964); and Peter Winch, "Philosophical Bearings" in Maurice Natanson (ed.), *Philosophy of the Social Sciences: A Reader* (New York: Random House, 1963), p. 101-18, as excerpted from Winch, *The Idea of a Social Science And Its Relation to Philosophy* (London: Routledge and Paul, 1958).

[34] It is at this point that the writer must disagree with Foskett, whose writings he otherwise greatly admires. Foskett quotes, with apparent favor, the following passage from Donald G. MacRae's *Ideology and Society* (Glencoe Free Press, 1962): "Most of the great sociologists can be thought of as trying to produce theories of Newtonian ambition about society . . . what, in all probability, sociology most needs at the moment is not either a Newton or a Darwin, but a Linnaeus to elaborate a really workable classification of social structures and the range and variety of institutional patterns and sequences." Quoted in Foskett's "Information Problems in the Social Sciences: With Special Reference to Mechanization" (London: Institute of Education, University of London, 1965). The reference is to page 3 in the processed version. It is my judgment that in order to do what MacRae would have his Linnaeus do, Linnaeus would also have to have Newtonian or Darwinian capacities. More reflective of the writer's point of view is Karl W. Deutsch's excellent discussion of the role of abstract theoretical structures in the organization and retrieval of knowledge in "On Theories, Taxonomies, and Models as Communication Codes for Organizing Information," *Behavioral Science*, XI (January 1966), 1-17.

[35] "Bibliographical Services in the Social Sciences," *Library Quarterly*, XX (April 1950), 81-83.

[36] *Ibid.*, p. 83-84, 87, 99. Implicit in this dichotomy, if it is valid, is the suggestion that bibliographic tools should be designed in terms of the audiences or user groups which are likely to employ them. There are certain parallels, it seems to me, between the positions of the librarian and the scholar and what Yeosha Bar-Hillel calls "reference-providing" and "data-providing" and Barbara Kyle, "dowsing" and "browsing." See Foskett, *Classification and Indexing in the Social Sciences*, p. 99-100. It is noteworthy that the editorial boards of the new bibliographic publications put out by the *American Behavioral Scientist* consist of both scholars and librarians.

[37] See Ferguson, *Specialized Social Science Information Services in the United States* (New York: Bureau of Applied Social Research, Columbia University, 1965). At least one of Ferguson's respondents suggested the need for a "concept archive," a demand with which the writer is strongly sympathetic. Several years earlier, Lazarsfeld undertook a somewhat parallel survey at the Bureau on the nation's social relations laboratories, bureaus of applied social research, and other research centers. This survey is reported in his "The Sociology of Empirical Social Research," *American Sociological Review* (December 27, 1962), 757-67.

[38] John S. Appel and Ted Gurr, "Bibliographic Needs of the Social and Behavioral Scientists: Report of a Pilot Survey," *American Behavioral Scientist*, VIII (June 1964), 51-54.

[39] See Knapp, "The Meaning of the Monteith College Library Program for Library Education," Address to the Association of American Library Schools, Washington, D.C., January 23, 1965, the reference in the processed version being to pages 10-11; and her "Involving the Library in an Integrated Learning Environment" in E. D. Duryea, Jr., and Dan Bergen (eds.), *The Library and the College Climate of Learning* (Syracuse, N.Y.: Program in Higher Education, School of Education and School of Library Science, Syracuse Univ., in press). The reference to the processed version of this essay is pages 25-26.

[40] Foskett, *op. cit.* p. 33, 120-26. As the writer understands it, the Kyle Classification (KC) follows a notion of "emergence" and is theoretically based, in some respects, on the kind of systems hierarchy suggested in Boulding's "General Systems Theory—The Skeleton of a Science," *General Systems*, 1 (1956), 11-17.

[41] See Bergen, *loc. cit.*

[42] See, especially, Julian Hochfeld, "Introduction and Special Features of a Study of Research Trends in the Social Sciences and Humanities," *International Social Science Journal*, XVI (1964), 479-95.

[43] "Bibliographical Services in the Social Sciences," p. 90-91.

RICHARD DE GENNARO

A Strategy for the Conversion Of Research Library Catalog To Machine Readable Form

This paper describes in very general terms a strategy for converting the retrospective catalogs of the nation's research libraries into machine readable form. The method envisages a class-by-class conversion and printing out in main entry order of the shelflist of the Library of Congress. The larger libraries would compare their shelflists against these lists adding their location symbols and unique titles to the master machine record and pulling from the master record machine readable catalog copy for their own holdings in each class. The resulting augmented LC master record would become a kind of national union catalog in machine readable form.

UNTIL A FEW YEARS AGO librarians were rather skeptical about the technical and economic feasibility of converting the massive catalogs of multi-million volume research libraries into machine readable form. The view was generally held that while current input into these catalogs could be computerized the problem of converting the retrospective file into machine readable form was so enormous that future technological advances would have to be awaited before it could be undertaken. The science and medical librarians, citing the rapid obsolescence of their literature, concentrated their efforts where the most immediate payoff was available—in computerizing the record for current acquisitions. While librarians of humanistic collections could not completely turn their backs on the bibliographical heritage of the past, many of them were prepared to settle either for maintaining the retrospective catalog in its traditional format or for reproducing it in book form by offset photography. Thus, the computer would give us a powerful handle on current acquisitions but could not relate them to the total record. These views are beginning to change.

Many librarians are now becoming less pessimistic about the technical feasibility of converting mass catalogs. Practical experience in conversion has been acquired, photocomposition devices and print chains with upper- and lower-case and diacritical marks are available, keyboarding equipment has been improved, and new online keyboarding devices and techniques are being introduced. The extremely high cost of converting mass catalogs still remains a chief obstacle, but even here the picture is beginning to change and there is reason for optimism. With the federal government's growing interest in research libraries it seems reasonable to hope that funds may eventually be made available to convert to machineable form certain library catalogs or bibliographical records of national importance. Since the National Union

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Catalog is the largest and most comprehensive and therefore potentially the most useful record available, attention has been focused on it as the most likely candidate for conversion. One study has already been made of the feasibility of such a project and the techniques by which it might be accomplished, and a committee of the Association of Research Libraries is presently exploring the problem.

While there are many advantages to starting with the NUC there are also some serious disadvantages. It is an alphabetical file of fifteen million cards, all of which would have to be converted before much real use could be made of it, since a portion of an alphabet is of limited utility. The conversion of fifteen million entries complete with notes and added entries is a formidable undertaking and would require several years and a considerable investment of editorial effort, which might spell the death of the project if allowed to get out of control. The end product, in spite of its tremendous usefulness, would still be incomplete and inaccurate by the standards that are used to judge the catalogs of large research libraries. Advances in computer and communication technology will tend to make these standards even less acceptable in the future than they are now.

The purpose of this brief paper is to suggest as a possible alternative a method of converting the retrospective catalogs of the nation's research libraries and eventually creating a national union catalog in machine readable form as a byproduct of that effort. The strategy would be to avoid a frontal assault on a multi-million card dictionary catalog and a straight A-to-Z conversion, and to divide this massive single conversion project into a series of smaller and more manageable projects, each of which would utilize and build on the experience gained in the previous ones, generating useful outputs as the effort progresses. A similar approach is being used with considerable success in the Widener library shelflist conversion project at Harvard.[1]

The starting point for this conversion effort would be the shelflist of the Library of Congress, a bibliographical record that is relatively accurate and up to date. Since it is a unit-card shelflist, each entry is complete with notes, subject, and added entries, and once converted to machine form would serve as the basic record from which all other secondary records could be generated by computer. What is being suggested here is that the LC shelflist might be converted class-by-class to form the basis for constructing a master machineable bibliographical record in LC classification order and alphabetically in main entry order within each class. Other libraries could compare their shelflists against these basic LC lists, adding their own location symbols and unique titles to the master file and pulling from it machineable catalog copy for their own holdings in each class. The resulting augmented LC master record would eventually become an accurate and serviceable national union catalog in machine readable form. The problem is to develop strategies and techniques to facilitate not only the conversion of the basic LC file, but also for comparing and adding the new titles and locations for the titles held by each succeeding library as it enters the system and for enabling a library to extract catalog entries for its own holdings from the record.

If we can assume that a MARC-type standardized format for inputting bibliographical data into a system will have been developed and adopted within the next few years, then one could envisage a project being refunded to re-create LC's catalog in machine readable form using a class-by-class shelflist approach. Initially, a subdivision of a science class

[1] Richard De Gennaro, "A Computer Produced Shelflist," *CRL*, XXVI (July 1965), 311-15, 353.

such as physics or geology, and a part of a history or literature class might be selected as pilot projects to test assumptions and develop techniques. For the sake of discussion, however, let us suppose that LC started its conversion with the E-F or American history class. Upon completion of the conversion of the entire class or a logical segment of it such as U.S. history, a printout would be produced listing the entries alphabetically by main entry. The American or U.S. history holdings of another research library, that of a university for example, could then be compared with this list. One possible way of doing this would be to search the entries of the university library's American history shelflist against this alphabetical main entry printout. Each time a match was encountered, the local call number would be noted on the main entry printout. At the end of this comparison, the local library would have an annotated printout accounting for a large proportion of the titles in its collection. It could then pull those entries held in common with LC from the master tape by simply keyboarding the LC card number (or a special machine-assigned identification number) together with its own call number and other local information, and having the computer create a new local tape combining the LC entries with the local ones.

The entries present in the university library's shelflist that were not present in the LC list could be duplicated by photography and converted, using the standard input format that had been used for the LC list. This could be done at the university library, but it might be preferable to send them to a central facility for further searching and conversion and for entry into both the master LC file and the university library file. These entries would also have to be assigned LC class numbers. The university library would then have in its tape file the bibliographical information it needs to re-create its shelflist and catalog and to produce other listings either in hard copy or machine form. The central master file would now be augmented to certain titles in the local library that were not held by LC along with locations for all the titles held by the local library. Several problems remain, such as reconstructing the syndetic apparatus or the complex of cross references in the catalog, and accounting for the titles in American history held by the university library but classified elsewhere for local reasons such as in reference or rare books collections, etc. The latter problem would be the responsibility of the local library while the former one would have to be dealt with by the central authority.

The same techniques could be applied to each successive segment of the LC shelflist as the conversion effort progressed. As classes were completed the computer could sort them into a single main entry list and eventually re-create a version of the dictionary catalog. After the contents of several major collections had been compared with and added to the augmented master LC file, the comparison and conversion effort of each additional library would be made increasingly easier because the number of titles not found in the master file would be decreasing. The comparison procedure would be easiest for those libraries which are classified according to the LC system because there would be a relatively close correlation of scope in the two shelflists. For this reason it might be better if the pilot comparison effort took place in such libraries rather than in those which do not use LC.

This problem of scope of shelflists could well be one of the most serious objections to the strategy being suggested. Many of the older libraries with rich collections, such as the New York public library, Harvard, Yale, etc., have classification systems which may be difficult to correlate effectively with LC's classes.

This difficulty might not be as serious as it may seem at first glance if one bears in mind that the comparison or searching is done in a printout of a class of the LC shelflist that has been sorted by computer into main entry alphabetical order rather than the list in classified order. Thus the American literature class of a library with its own scheme would be searched against the equivalent part of the LC schedule arranged by main entry. Nevertheless, the problem remains and should not be minimized. On the other hand, the catalogs of these libraries, because of their uniqueness, age, size, and complexity, are going to present serious problems of compatibility in any future national bibliographical system based on computers and sooner or later these problems will have to be tackled and solved.

The techniques outlined for comparing, searching, annotating, and adding to files are here described in terms of today's familiar technology for the sake of clarity. In an actual project the whole process would presumably be considerably streamlined by the use of advanced online computer technology with visual display consoles, mass random access storage, and sophisticated means of communication. Thus, instead of actually producing a computer printout of the segment of the LC shelflist to be used for comparison, it could be in random access storage and accessible through a cathode-ray tube or visual display console. The local card shelflist entries would be searched in sequence by calling for the appropriate part of the alphabet on the console display unit. Each time a match was encountered a symbol would be added to the machine record together with the local call number and any other necessary local information. This would greatly facilitate the entire process and reduce keyboarding to a minimum.

The ultimate goal of the effort is to create in machine readable form an inventory of the holdings of the nation's major research libraries. The method suggested looks toward building this record in a gradual, orderly, and economical manner. Each bibliographical record would be in a standardized format, and the master file would be the basic record which would be put into mass random-access storage for online long-distance consultation when these techniques become economically feasible in the future. The file would serve as a data bank from which extracts of various types and for various uses could be drawn. While it is theoretically possible to produce the entire contents of this file periodically in printed form, this would be extremely expensive and probable unnecessary. It might be far more useful to produce a large variety of shorter and more specialized lists based on class, subject, language, date of publication, etc.

Some of the principal advantages of this conversion strategy are summarized below.

1. The master record is based on a relatively accurate and solid foundation, *i.e.*, the current inventory records of LC and the participating libraries—their shelflists.
2. It is a gradual process which can be changed, developed, and improved with experience. It is flexible, unlike the single frontal assault required for an A-to-Z conversion of fifteen million entries.
3. It would not only give LC a tremendous impetus in its total systems effort but would also make possible a parallel development for the entire research library community by removing the chief bottleneck—conversion of the retrospective file.
4. The cost and effort of keyboarding a bibliographical entry would only occur once and in a favorable environment.
5. The funding of this single but seg-

mented effort might be facilitated because the subject approach would create interest and enthusiasm among the various segments of the research community including user groups as well as funding agencies. The E-F classes would interest historians, scientists would be eager to see the Q class done, etc.

6. The strategy and techniques could be inexpensively and meaningfully tested and costed in one or more pilot projects, such as the conversion of the Physics or Geology subdivision of the Science class, and a segment of a history or literature class. A decision to proceed with, modify, or abandon the strategy could be made on the basis of the experience and information generated in these pilot efforts.
7. There is no reason why, after suitable pilot projects, several classes could not be converted simultaneously. The work could be geographically decentralized by duplicating portions of the LC shelflist by photography and having the conversion work done outside of Washington, where space and personnel might be more readily available.
8. Useful lists of all kinds, such as shelflists, classed catalogs, subject bibliographies, chronological, alphabetical, and language listings, etc., could be created as each portion of the list is completed. There is no need to wait until the entire Library of Congress shelflist has been converted and augmented to obtain products of this kind.
9. Eventually the complex of cross references that tie a catalog together could be reproduced and all classes merged by computer into a single dictionary catalog in machine form.

The conversion of the present NUC or the re-creation of it in a new form is obviously an extremely complex and costly undertaking and one which has tremendous implications for the future development of libraries. This brief paper is not meant to give pat answers as to how it should be done nor does it pretend to be a detailed and carefully constructed master plan. The most that can be said for it is that it offers an idea for a strategy which may be worth considering along with others that are being discussed.

Whatever the strategy, the job of converting the massive retrospective record can and should be done, but it need be done only once in a standard format providing for full access. These millions of bibliographical entries were keyboarded several times before they came to rest as printed LC cards, and it is not unreasonable to suggest that they be keyboarded once more in machineable form to put the nation's research libraries firmly into the computer age. ■■

RICHARD M. DOUGHERTY

The Realities of Reclassification

Interest in reclassification and recataloging has revived with the development of a national acquisitions and cataloging program. The paper reviews the pros and cons of reclassification and examines three common assumptions concerning reclassification. The primary factors governing the desirability of reclassification are discussed, such as size, age, organization of the collection, etc. Finally, the merits of partial reclassification are presented as an alternative to total reclassification.

A NUMBER OF ACADEMIC libraries have initiated reclassification projects in recent years. These same institutions, though, have not always faced up to the harsh realities of reclassification—its costs, advantages, and disadvantages. Too often a decision to reclassify has been based solely on unsubstantiated assumptions and emotional reactions. Reclassification is a lively issue, primarily because many libraries are considering switching from Dewey to LC classification. In part it is the imminence of a national shared-cataloging program that has stimulated new interest in LC classification.

Libraries principally are interested in taking advantage of work produced by the Library of Congress, but the question of reclassification is inextricably related to the decision to adopt LC classification. The purpose of this paper is to re-examine the advantages of reclassification, both real and imagined; to enumerate the factors on which a decision must be based; and to discuss the alternative of partial reclassification in order to bring into sharper focus the real cost of reclassification.

Before proceeding further, however, we must establish a clear distinction between the benefits realized by adopting LC classification from those of reclassification. If the literature is any indication, confusion abounds. Writers often cite cost economies of utilizing LC copy as an advantage of reclassification, and while it is true that reclassification with LC copy will be cheaper than reclassification without LC copy, these economies are achieved through the processing of new titles, not by reprocessing of retrospective collections. The decision to reclassify may be justified on several grounds, but not under the banner of "cost economy."

The advantages of adopting the LC classification have been thoroughly documented in the literature. Economy and speed are the principal reasons—economies in book processing and speedier flows of material through the technical services departments. Another benefit of adopting LC is that the change increases the usefulness of bibliographic tools published by the Library of Congress. Also, the LC scheme is purported to be a more suitable system for organizing research collections. Although not often cited as a benefit, at least initially, availability of LC copy reduces the ever present temptation to alter, locally, cataloging copy. Moreover, the use of LC copy has prompted libraries to organize special processing units so that titles for

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which cataloging copy is available can be processed entirely by nonprofessional staff.

Switching to the LC classification is not without its disadvantages, however. The changeover produces two collections, consequently readers and staff members must be trained to work with two systems. Work procedures become more complicated and expensive since parallel operations must be maintained, *i.e.,* circulation, cataloging, marking, etc. In the long run, however, the greatest disadvantage may be a library's inability to resolve economically the problems of reclassifying retrospective collections, once the LC classification is adopted.

Advantages of Reclassification

The literature attributes a number of benefits to reclassification. The advantages usually cited are: (1) reclassification and recataloging will correct past errors; (2) LC is a more suitable scheme for scholarly collections; (3) reclassification avoids the confusion brought about by two collections; and (4) reclassification will increase the effectiveness of browsing. A fundamental difficulty here is that with the possible exception of the first, correction of errors, the gains credited to reclassification are founded on traditionally accepted assumptions, and the tools used to measure their impact are, by and large, subjective. It is not a foregone conclusion that reclassification will produce improvements dramatic enough to convince cost-conscious nonlibrary administrators. For this reason, any library contemplating reclassification should weigh realistically the probable impact of each factor on library services.

1. *Library of Congress classification is a more suitable scheme for research collections.* There is probably a great deal of truth to this statement although like other schemes LC has its innate weaknesses. It is becoming fashionable to inculpate Dewey for our classificatory ills—Dewey also serves as a convenient scapegoat. But in truth the root of the trouble may lie elsewhere. Since a corps of disgruntled users can be found on most campuses, regardless of the classification system in use, the real problem may be that no universal classification system is capable of satisfying completely a heterogeneous user group. Rest assured, readers will quickly dispel any notion that switching to LC eliminates complaints.

2. *Reclassification will increase browsability.* At least two assumptions are implied by this statement. First, that browsing is a legitimate expectation of a research collection and, second, that LC provides a more browsable collection than other classification systems. We know, empirically at least, that browsing is affected by a variety of factors; the type of library, the level of user, accessibility of the collections (open *vs.* closed stacks), the subject area, etc. Our understanding of browsing is not complete; there are still fundamental questions to be answered. How many readers actually browse; under what conditions do they browse; how many titles are required to satisfy a browser's need; what correlation exists between the books finally borrowed and the original need as the reader conceived it?

An open stack research collection organized according to a universal classification scheme itself militates against browsing. Most librarians agree that a universal scheme will result in the scattering of related materials. The degree of dispersal varies from subject to subject. The purpose of an open-stacked library is to make materials more accessible to users; in other words, we are extending a special invitation to borrow more books. The latest books (and often the most attractive) on a subject should be in circulation most of the time, with the result that the browser will frequently have to select from the remains.

3. *Reclassification will avoid the difficulties and inconvenience of working*

with two collections. Two collections will erect new barriers between readers and materials. Two collections will also disperse related materials and consequently reduce the effectiveness of browsing. There is no evidence, however, to support the contention that two collections will seriously impede library service. Most libraries already are composites of collections organized according to different schemes. It is not unusual for a library to organize its phono-records, archives, manuscripts, government documents, curriculum collections, pamphlets, and undergraduate collections all according to different classification schemes. Parenthetically we must add that from the user's point of view, a collection will be split for the duration of the reclassification project; and based on recent experience, this situation might well persist for a number of years.

The principal arguments against reclassification center on economic issues. While a library must wage an uphill battle to produce a tangible "reclassification profit sheet," a "reclassification price tag" is easily calculated, particularly a summary of direct labor costs. In this paper we have defined "direct" costs as those expenses incurred actually in reclassification, and "indirect" costs as the funds that would have been spent on other services if reclassification had not been undertaken.

Criteria for Reclassification

The dilemma becomes one of weighing the potential advantages of reclassification against its costs. No one can categorically state that reclassification is desirable or undesirable. Published cost figures are not too useful because they reflect conditions unique to one environment. There are, however, several useful guides available to librarians contemplating reclassification.

1. *Size of the collection.* (a) There is a high correlation between a collection size and the cost of reclassification. There is, however, probably no point at which we can state that size, and size alone, precludes reclassification. (b) The importance of classification will diminish as the collection grows. The call number will serve more as a locator device than as a means for arranging books by subject content. (c) The larger the collection, the greater the number of titles for which there will be no LC cataloging copy available. This will proportionately increase processing costs.

2. *Age of the collection.* The older the collection, the more recataloging is likely to occur. Obsolete subject headings, poor entries, and time-honored local practices all will be contributing factors. That recataloging can be divorced from reclassification is a tale from our professional folklore. Reclassification cost predictions that do not allow for some recataloging should be viewed with skepticism. Those who reassure that no recataloging will occur are likely deluding only themselves. I have discussed this problem with a number of catalogers. Almost without exception they expressed the view that many more titles were recataloged than administrators were aware of. A cataloger is likely to believe that upper level administrators are not sufficiently in tune with the realities of reclassification. To instruct a cataloger to ignore mistakes of the past and to change only classification numbers is likely to lead to worker frustration. What satisfaction is there in releasing work that (from the cataloger's point of view) is blatantly sloppy or incorrect?

The importance of allowing for recataloging cannot be stressed too strongly. Such considerations as the proportion of titles in a collection for which LC cataloging copy is available and the age of the collection, to some degree, will determine the number of books that will require original reprocessing.

3. *Organization of the collection.* Decentralized collections will increase processing costs. The costs of pulling, chang-

ing, and refiling records, as well as book transportation costs, are all dependent on the extent of decentralization.

There are additional factors not directly related to costs that also warrant consideration. These include:

4. *Type of library.* Libraries serving readers who are more likely to browse, *e.g.*, college libraries rather than university libraries, may have a greater need for reclassification. One can also anticipate locating LC copy for a large proportion of the titles that would normally be acquired for a college library or undergraduate library collection.

5. *Nature of the building.* Reclassification may be more desirable for collections housed in a fixed-function building. Collections in modular buildings can physically be relocated in order to minimize the inconveniences of two collections. (Of course the architecture of a building could also have a direct bearing on costs.)

6. *Political environment.* The campus political climate cannot be ignored. The top library administrators are in a position to mold campus sentiment one way or the other. Reclassification undertaken with the support of the institution's administration and faculty will proceed much more smoothly than when the academic community is apathetic or opposed to the project.

7. *Financial support.* Adequate and stable financing is imperative if the project is to be completed within a reasonable period of time. Under-financed projects will drain funds from other programs or, worse, will bog down completely for a lack of support. Even after a library has assiduously weighed the criteria, all that may be possible is the development of a general profile. For example, decentrally organized research collections numbering from five hundred thousand to one million volumes or more will be most expensive to reclassify; by contrast, a recently established college library collection (the smaller, the better) serving undergraduates exclusively will be the least expensive to process. Unfortunately, most real life situations will fall between these two extremes. In such cases, the final decision will depend on the best judgment of administrators and staff. There is, however, an alternative to an either/or decision.

Partial Reclassification

There will be situations in which partial reclassification is preferable to total reclassification. This will be true for a variety of reasons, *e.g.*, a lack of funds, the tenor of campus politics, architecture of the building, or rapid growth of the collection. The effect of sudden collection growth is sometimes overlooked. Collections can be expected to grow rapidly in institutions that undergo educational metamorphoses—junior to four-year colleges; teacher to liberal arts colleges, and colleges to multipurpose universities. Because of rapid growth, the bulk of the working collection will be classed in LC within a relatively short period of time; consequently, the need for reclassification may become less pressing.

If a library decides to undertake partial reclassification, at least in the short run, categories to be reclassified will have to be selected. Added copies and added editions are usually reclassified, although some libraries have chosen not to reprocess either earlier editions or first copies. Separately housed or specially organized collections are often viewed as desirable starting points. An undergraduate collection is a case in point. It is a discreet body of materials housed in a separate area, intended for a user group that can be partially segregated from other user groups. Reference collections or specially shelved materials such as oversized books are also possibilities.

Subject obsolescence of materials also deserves attention. Why reclass materials in science and technology when a short

use-span can be anticipated for most of these books. In fact, these same materials might someday form the core of an on-campus storage unit. On the other hand, the humanistic disciplines, for the most part, are not as affected by age; so that a stronger case is plausible for reclassifying the humanities rather than the sciences, if one is concerned primarily with the convenience of users. The humanities and related areas, however, comprise a sizeable proportion of collections so that costs must be weighed against convenience.

Periodicals and serials, at first glance, will appear to be prime candidates. But reconsider the question, because on closer examination the subtle complexities will begin to materialize. The futility of trying to distinguish between periodicals and serials illustrates well the difficulties. Remember, too, that no great advantage can be achieved in arranging periodicals by any one classification system. Classification numbers, either via LC or Dewey, are usually general in scope and often too broad to be of much use to browsers. Furthermore, when periodicals are shelved separately from monographic materials, subject arrangement becomes even less meaningful. Reclassification of monographic serials is even more complex. A library would be well advised to think the problem through carefully before undertaking serials reclassification.

Summary

Too often libraries have undertaken reclassification projects without adequate supporting data. Anticipated cost savings are exaggerated because the data are based on fallacious assumptions. Estimates are unrealistic either because they do not reflect actual systems costs or because the savings realized by adopting LC cataloging copy are also erroneously claimed for reclassification of retrospective collections.

To praise or denounce libraries that have undertaken reclassification is not the purpose of this paper; the point to emphasize is that a library contemplating reclassification should examine realistically the pros and cons and the alternatives before reaching a final decision. Too often a library that has embarked enthusiastically on the course of reclassification soon finds itself mired in confusion with funds exhausted. In order to continue work, monies are diverted from other worthwhile projects. Because funds are a scarce commodity and projects so plentiful, each library must establish a priority list for potential projects such as reclassification. Librarians do not agree on the importance of reclassification, but one important point is that no matter how we frame it, by definition reclassification boils down to redoing work. Is it worth the price?

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ROBERT SOMMER and PEGGY PETERSON

Study Carrels Re-Examined

The data from several investigations of study habits are reviewed. The most common place of study is the student's own residence which has the advantage of being personal space rather than institutional space. Present data on use of study carrels and student reaction to them do not support recommendations for substantial increases in carrel facilities.

THERE SEEMS TO BE disagreement between the empirical data about study carrels and the recommendations being made concerning them. There are articles, pamphlets, and books that maintain that students like study carrels, but data from surveys of student opinion and behavior do not appear to support this view.

Probably the most comprehensive investigation of the study habits of American college students was undertaken in the 1950's at four New England colleges —Amherst, Smith, Mount Holyoke, and the University of Massachusetts—directed by a committee of faculty and staff from each of the colleges.[1] A variety of methods was used, including questionnaires, interviews, direct observation, and study diaries. Student replies showed a preference for small study spaces with an antipathy toward large open reading rooms. However, when students were asked specifically how often they would use private library carrels, the replies of the 353 students were as follows:

95. How often would you study working in a private carrel (a cubicle with desk and bookshelf) in the library building?

	Per cent of replies
Always	6.7
Almost always	21.3
Usually	10.6
Often	12.3
Occasionally	17.9
Rarely	19.3
Never	10.6

These figures indicate that half the students would use the carrels occasionally or less.

A Study on Studying summarizes the results of a survey administered to seven hundred students at six California junior colleges.[2] These students were asked specifically for their opinions of study carrels, and the replies were as follows:

Do you want to study in a carrel?

	Per cent of replies
Extremely desirable	13
Very desirable	14
Somewhat desirable	23
Neutral	26
Somewhat undesirable	13
Very undesirable	6
Extremely undesirable	4

[1] S. M. Stoke, *et al., Student Reactions to Study Facilities* (Amherst: Committee on Cooperation, 1960).

[2] Community College Planning Center, *A Study on Studying* (Stanford: School Planning Laboratory, n.d.).

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Again, half the students were neutral or disinterested in the use of study carrels. There was no difference between the replies of 264 students on a campus with carrel space available and 405 students on campuses without carrel space.

Bricks and Mortarboards, published in 1964 by Educational Facilities Laboratories, describes the situation at Chicago Teachers' College–North. This is a new campus with private study areas, called Q-spaces or Quest spaces, which have become the trademark of the architectural firm Perkins and Will. Several wide corridors are lined by two hundred Q-spaces which, when equipped with lockers, lamps, chairs, and desks, cost about $175 each. Published reports indicate that these study carrels are underutilized, at least in terms of the planners' goals.[3]

A recent survey at the University of California, Davis,[4] of preferences for library spaces showed that half the students preferred the reading rooms to stacks or carrel areas. The replies showed some fascinating spatial needs, probably related to personality and social factors. There are some students who need the presence of others to maintain their attention. This may not be true when the student is vitally interested in the material, but since a great deal of studying involves material of minimal interest, the importance of, to use the student's own phrase, "a studious atmosphere," seems a relevant consideration.

One salient fact omitted thus far concerns the percentage of study actually done in each kind of location. The New England study disclosed that between 55 and 78 per cent of all studying took place in the students' own rooms. Study diaries in the California junior college survey showed close to 80 per cent of studying being done in the students' own residences. Study dairies maintained by students at the University of California, Davis, also show 80 per cent of the studying being done in the students' own residences. In another study the authors asked students to design ideal study areas for themselves. This was an open-ended question with the student able to include anything he wanted. The answers pictured an area that was soundproofed, well-lit, containing a large desk with considerable writing surface, comfortable chairs, study lamp, the student being the sole occupant of the room, etc. No students mentioned individual study carrels in the library as their "ideal study area." Libraries obviously cannot realistically aim at providing such "ideal" study places for students, since economic as well as space considerations enter the picture, but the evidence does seem to indicate the disagreement between the ideal study area as the student sees it and the traditional library study carrel; as well as the *similarity* between the ideal study area and the student's own room, if it were properly designed and furnished.

To build large study halls equipped with carrels and partitions, capable of seating one-third of school enrollment at any one time, if current recommendations are heeded,[5] is an expensive solution that provides an impersonal institutional environment rather than personal space. The characteristics of institutional space have been described as large, cold, impersonal, not owned by any individual, over-concentrated rather than overcrowded, without opportunity for shielded conversation and providing barriers without shelter, isolation without privacy, and concentration without cohesion.[6]

[3] Mel Elfin, "Classrooms" in *Bricks and Mortarboards* (New York: Educational Facilities Laboratories, 1964).

[4] R. Sommer, "Ecology of Privacy," *The Library Quarterly*, XXXVI (July, 1966), 234-48.

[5] R. E. Ellsworth and H. D. Wagener, *The School Library* (New York: Educational Facilities Laboratories, 1963).

[6] R. Sommer, "Alien Buildings," *Arts and Architecture*, LXXXIII (April 1966), 18-19.

Results of interviews in dormitories and those conducted in college libraries have presented surprising contrasts. In one study the students interviewed in libraries felt more privacy in the library than at home. When students were interviewed at home, however, they felt that their rooms were much more private than the library. It would appear that people who want the psychological isolation provided by an institutional environment will go to the library to study, while those who prefer an individual territory, perhaps shared by a roommate, will remain in their rooms. The necessity for providing a variety of study spaces, rather than relying exclusively on study halls, carrels, or stack areas becomes apparent, particularly if one considers that the vast majority of studying takes place in the students' own residences. The money going into study halls has to come from somewhere else. Dormitory planning committees on occasion have had to battle to preserve bedroom size against incursions by advocates of more lounges, recreational rooms, or study halls. Ideally it would be desirable to provide separate study halls in dormitories for students who want them, but, except at a very few well-endowed institutions, the square footage going into a carrel room has to come out of some other area.

This article is not intended to discourage the provision of study carrels in libraries. Rapid changes in educational hardware as well as new demands for individual research make it incumbent upon librarians to question current library design and furnishings. It has not yet been proven, however, that study carrels represent a sufficiently great advance in library furnishings to occupy, as has been recommended, 60 per cent of library study space. Since present data indicate that students spend most of their time studying in their rooms, which have the advantage of privacy as well as possibilities for relaxation, movement, and "being oneself," perhaps what are needed are institutional arrangements that allow students more time for studying at home. Those who want to transfer the university model to the secondary school might give some thought to reducing contact hours in high school to the university average of 12-15 per week. Students who lack study facilities at home could have them provided somewhere in the school building, perhaps in classrooms divided with movable partitions. Those students who possess adequate study space at home should not be required to spend unnecessary hours in an institutional environment unless they choose to do so.

During visits to dormitories in ten different campuses, the authors found that the most common place for the student to be at the moment of the interview was on his bed. The bed was preferred for relaxation, conversation, and light reading. The study desk was used for hard studying, particularly when note-taking was involved, with the floor used as an auxiliary storage and work area. When unoccupied classrooms are used as study places, it is common to find students heading first to the instructor's desk which contains the largest writing surface and, if that is taken, to spread their belongings on several adjacent chairs to provide more working area and an enlarged personal territory.

It may be that individual study as we know it is less efficient as a learning technique than a student interacting with a teaching machine, controllable TV tapes, or group discussion methods. The problem is one of *learning*, the student acquiring knowledge and skills that he did not possess before, rather than studying, teaching, or the combination of the two we call education. One of the authors recently spent a week observing study habits at a marine field station where twenty-five undergraduates were enrolled in a summer course. Although

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MARIANNE COOPER and HERBERT W. COOPER

Interpreting Results of Statistical Studies

Statistical analysis is a tool to be used by librarians only after critical decisions have been made about the nature of their libraries' operations. It is shown that different conclusions might be drawn from identical data by presupposing different, but equally plausible, relationships between the variables. Different conclusions might also result from analyzing subsets of data rather than the sample as a whole. The role of the librarian as a basic decision-maker in statistical studies is emphasized by presenting alternative interpretations of a hypothetical set of data.

LIBRARIANS, LIKE OTHER professional scholars, are making increased use of statistical techniques to analyze data. Their purpose is to make comparisons or forecasts that are as free as possible from subjective factors or preconceived notions. In order to use statistical techniques effectively, however, librarians must consider two points very carefully. Both are related to the relative positions of the librarian and the tool called statistical analysis.

The first point is that the librarian must decide what relationships can reasonably be expected to exist between the variables of interest. *After* the librarian makes this decision, statistical analysis can be used to evaluate the most likely values of various constants.

This sequence of events is nicely illustrated in a recent paper by Reichard and Orsagh.[1] They collected values of five variables for each of approximately three hundred institutions. The data were: expenditures for current acquisitions, holdings, number of undergraduates, number of graduate students, and number of faculty members. The investigators then decided, *a priori,* that they would use equations of the following form to correlate the data.[2]

$$E = C_1 + C_2U + C_3G + C_4F \quad (1)$$

After this decision was made, statistical analysis was used to provide the best values of the constants C_1, C_2, C_3, and C_4. The point to be emphasized is that the investigator provides the basic form of the equation, and statistical analysis provides the values of the constants.

Equation 1 is the mathematical equivalent of the following statements. "The increases in expenditures are directly proportional to the increases in the number of undergraduates, number of graduate students, and number of faculty members. It costs C_2 dollars to add one undergraduate, C_3 dollars to add one graduate student, and C_4 dollars to add one faculty member, in all schools, at

[1] Edwin W. Reichard and Thomas J. Orsagh, "Holdings and Expenditures of U.S. Academic Libraries," *College and Research Libraries,* XXVII (November 1966), 479-87.

[2] E, U, G, F refer respectively to expenditures for current acquisitions, and number of undergraduates, graduates, and faculty.

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all enrollment and faculty levels." While this is certainly a plausible assumption, it leads to the conclusion that the undergraduates have, if anything, a somewhat negative influence on expenditures and that it costs seven times as much to add a faculty member as it does to add a graduate student.

Other conclusions, however, might be drawn from the same data if a slightly different viewpoint were initially taken. In a library there must, of course, be a bare minimum of equipment and personnel present to serve even one patron. Once these minima are present, two, three, or more can be served with little increase in expenditure. This situation seems to be analogous to that of a chemical plant where a certain minimum amount of equipment and manpower is required to produce even a trickle of product. Again after these minimum facilities are present, production can be increased, up to a point, by relatively slight additional expenditures. In both the library and the chemical plant the additional expenses are less than proportional to the additional "throughput." To pursue this analogy we note that costs of chemical plants (and also many other items) are related to their size by an equation of the form:

$$\text{cost} = K\ (\text{size})^n \qquad (2)$$

where n is typically between 0.4 and 0.8, depending on the type of plant and, somewhat, on its size range. Equation 2 implies that the *per-cent* increase in cost is related to the *per-cent* increase in size. If the exponent n is less than 1.0 the per-cent cost increase is less than proportional to the per-cent size increases. We would therefore expect, in view of the above, that equations of the following form might be more realistic correlators.

$$E = K\ U^A\ G^B\ F^C \qquad (3)$$

Since this equation differs fundamentally from the linear ones presented in the aforementioned article it is possible that different conclusions might result. Whether this would, in fact, be the case could be established by making simple logarithmic transformations and re-analyzing the data.

This approach was tried with the hypothetical numbers listed in Table 1 of this article, constructed to give results similar to those of Reichard and Orsagh. Multivariate analysis of the type they used led to the following equation.

$$E = 5321 - 8.7U + 116G + 188F \qquad (4)$$

The coefficients indicate that it would cost \$116 to add a graduate student, \$188 to add a faculty member, but –\$8.70 (*i.e.*, a credit) to add an undergraduate *if equation 2 is accepted.* If, however, the data are analyzed by presupposing the percentage type of relationship implied by Equation 3, one obtains the following.

$$E = 202\ U^{0.157}\ G^{0.334}\ F^{0.5} \qquad (5)$$

This indicates that expenditures must be increased by 1.5 per cent, 3.2 per cent, and 4.8 per cent for a 10 per cent increase in the number of undergraduates, graduate students, and faculty, respectively, *if equation 3 is accepted.*

Which equation should be accepted? Unless the "coefficient of multiple determine" is much greater for one of the equations the librarian must use his experience, judgment, and knowledge of library procedures, to make this decision. This question always arises in empirical studies where causes and effects are not investigated. The first point, then, is that it is very important to examine the nature of the equations chosen to represent the data.

The second point for librarians to consider is that every library situation is, to some extent, special and unique. Reichard and Orsagh point out that one must use quantifiable variables, while recognizing that many other factors will exert

TABLE 1
HYPOTHETICAL USER AND EXPENDITURE DATA

Library	U	G	F	E
1	500	100	50	15,000
2	1,000	180	90	38,000
3	1,200	180	150	43,000
4	1,400	200	120	43,000
5	1,400	220	190	55,000
6	4,000	800	350	125,000
7	4,400	700	500	145,000
8	4,500	750	450	150,000
9	5,500	900	600	165,000
10	6,000	1,500	800	280,000

their influences. For example, small college libraries are likely to have different organizational patterns from those of large university libraries; while their budgets will differ, their service to clientele might be equally effective.

Consider a hypothetical university serving thirteen hundred undergraduates, two hundred graduate students, and one hundred and thirty faculty members. Its library expenditures would be estimated at $41,600 (from Equation 4) or $41,500 (from Equation 5), if it were considered to be an average library belonging to a population of which the ten (hypothetical) samples listed in Table 1 are representative. Examination of the data, however, suggests two populations; small libraries (numbers 1 to 5) and large libraries (numbers 6 to 10). If a multivariate analysis of the first five samples, only, is performed one obtains the following.

$$E = -13294 - 6.62U + 270G + 97F \quad (6)$$

and

$$E = 20\ U^{-0.16}\ G^{1.431}\ F^{0.265} \quad (7)$$

These equations lead to predictions of $44,700 and $45,800, respectively, for the library, considered as a "small" library. It is noted, parenthetically, that the relative influence of undergraduates, graduate students, and faculty is different in "small" institutions. It is emphasized, however, that Table 1 is hypothetical and has been prepared only to illustrate the points herein discussed. The essence of the second point is that by stratifying data one might obtain a different but more useful comparison. The librarian must furnish the basis of comparison. This is a matter requiring the librarian's expertise, experience, and insights.

Both of the points discussed above can be summarized as follows.

1. The forms of types of relationships assumed to relate the variables are chosen before statistical analysis is undertaken. These relationships must be examined critically in all cases.
2. Librarians must decide which data are to be analyzed, which form useful or natural subgroups, etc. These are questions relating to librarianship and are not statistical questions.

■■

WILLIAM E. McGRATH

Determining and Allocating Book Funds for Current Domestic Buying

A device is outlined to help formulate the annual book budget request. Courses described in the college catalog are matched with the books listed in the American Book Publishing Record, BPR, Cumulative 1965. *Courses, treated as if monographs, are assigned Dewey classification numbers and arranged in decimal sequence by groups. Books in* BPR *falling into the groups are tallied; the DC groups are then rearranged by departments and the number and cost of books in each are totaled. Results are sound estimates of each department's probable current domestic book needs for that year and may be applied to the subsequent year as an estimate of what will probably be needed. They may be used as factors in an allocation formula.*

FOR GENERATIONS, academic librarians have been trying to formulate realistic budget requests. Annual figures presented to presidents, administrators, and other authorities have usually been mere estimates or guesses. Requests do not always reflect actual needs and are often unconvincing. If such figures were more soundly generated, as Ralph Ellsworth[1] points out, libraries would have more success in getting what they need.

Two useful figures might be (1) the number and (2) the cost of books published each year in the United States having immediate relevance to each of an institution's academic departments. These figures, if available, could be used in at least two ways. One, already stated, would be to make possible a better estimate of an institution's total current domestic book needs, and another would be as factors in allocating the book budget among the several academic departments.

In the past, such figures have been hard to find, but since the publication of the 1965 cumulative volume of the *American Book Publishing Record, BPR,* they have existed. If for this purpose libraries can accept the arbitrary limits provided by *BPR*—for example, that books must be of forty-nine pages or more—and can assume that United States publishing accurately reflects current academic interest, then *BPR* is a highly useful tool for determining the annual funds needed for current domestic books, and for determining appropriate distribution of these funds to academic departments.

BPR's arrangement provides a ready made and convenient device—the Dewey Decimal classification—for relating or matching its contents to a curriculum. As an experiment, the library of the South Dakota School of Mines and Technology employed this device to match 10,873 *BPR* titles[2] to the school's aca-

[1] Ralph Ellsworth, "The Legislature Is Not Convinced," *Library Journal,* XC (May 15, 1965), 2199-2203.

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[2] Total number of titles in the 1965 *BPR* cumulation: 28,595.

TABLE 1

DEWEY DECIMAL GROUPS, AND THEIR DEPARTMENTAL LABELS—PARTIAL LIST

DC Groups	Departments
511-514	Mathematics
515	Civil Engineering
516-518	Mathematics
519	Computation Center
526.8	Geology
526.9-526.98	Civil Engineering
530-531.37	Physics
531.38	Mining
532	Civil Engineering
533-536	Physics
537-538	Electrical Engineering
539	Physics
540-541.344	Chemistry
541.345	Metallurgy
541.346-542	Chemistry
543-545	Experiment Station
546-547.133	Chemistry
547.134	Metallurgy

demic departments. Each of the courses listed in the college catalog was assigned one or more Dewey numbers. (The Library uses the LC classification system but this did not affect the project.) The DC numbers were then arranged in sequence (Table 1). The subjects covered were sufficiently broad so that most numbers fell into groups—thus keeping the list of numbers small. In many cases, substantial spans of DC numbers were created by these groups. Each number, or group of numbers, was labeled by the name of the department. Since the courses were already arranged by departments, the DC numbers, in effect, classified each department. Departmental overlapping was anticipated (two or more departments receiving the same DC numbers) but little occurred. When it did occur, the duplicate numbers usually fell into the same department.

All titles in *BPR* falling within each group of Dewey numbers were then tallied. Where two prices were given—for example, hard cover and paperback—the highest price or hard cover price was tallied. Where no price was indicated, the table was still counted.

After the two counts (number of books and cost) were completed, the groups containing them were rearranged according to the original listing—that is, by the academic departments (Table 2). The counts in the DC groups under each department were then totaled. The results, shown in Table 3, are the number of books and their cost published in the United States having potential relevance to the work in each department. The figures, though of the previous year, were then applied to the current year as an estimate of what would probably be needed for the new year's domestic output. The assumption was made that the number and cost of books as well as subject emphases change gradually, not drastically, from one year to the next. If this were so, the figures would remain meaningful and usable.

Criticism of the tabulation could cite its lack of serials, reports, and books of forty-eight pages or less. Much of this material, of course, comes to the library at little or no cost and therefore does not greatly affect the budget. If serials must be tabulated, however, *New Serial Titles, Classed Subject Arrangement* presumably might be used in the same manner as *BPR*.

TABLE 2

DEPARTMENTS AND THEIR INCLUSIVE DC GROUPS—PARTIAL LIST

Department	DC Groups
Chemistry	540-541.344
Chemistry	541.346-542
Chemistry	546-547.133
Civil Engineering	515
Civil Engineering	526.9-526.98
Civil Engineering	532
Experiment Station	543-545
Geology	526.8
Mathematics	511-514
Mathematics	516-518
Mathematics	519
Metallurgy	541.345
Metallurgy	547.134
Mining	531.38
Physics	530-531.37
Physics	533-536
Physics	539

TABLE 3

NUMBER AND TOTAL COST OF BOOKS RELEVANT TO EACH DEPARTMENT PUBLISHED IN UNITED STATES IN 1965

Department	Number of Books	Total Cost
Biology	249	$ 2,374
Chemical Engineering	114	1,397
Chemistry	274	4,619
Civil Engineering	292	2,780
Computation Center	73	611
Electrical Engineering	268	2,418
Engineering Exp. Station	36	440
Geology	126	1,245
Social Science & Humanities	8,040	45,296
Math	316	4,917
Mechanical Engineering	291	2,843
Metallurgy	41	1,231
Meteorology	94	392
Mining	21	243
Paleontology (Museum)	26	186
Physical Education	110	644
Physics	362	4,287

Another potential criticism is that courses described in the college catalog do not necessarily encompass faculty research. To avoid this dilemma, DC numbers could be assigned to research in the same manner as for courses. One might assume, of course that unless demonstrably otherwise a research project would fall into, or close to, the same DC groups as a course caught by the researcher.

BPR's deliberate limitation to domestic coverage forbids any extrapolation of tabulations made from it to foreign publishing. Although there is little evidence that world-wide publishing emphasis is significantly different from that indicated by *BPR*, neither is there evidence that it is similar. Therefore, foreign and out-of-print titles would still be handled on an *ad hoc* basis.

Some interesting observations can be

TABLE 4

NUMBER OF BOOKS, AVERAGE COST, AND THEIR PERCENTAGE FOR AN ALLOCATION FORMULA

DEPARTMENT	BOOKS		COST	
	Number	Percentage	Average	Percentage
Biology	249	2.29	$ 9.54	5.53
Chemical Engineering	114	1.05	12.26	7.10
Chemistry	274	2.52	16.86	9.77
Civil Engineering	292	2.69	9.52	5.51
Computation Center	93	.67	8.33	4.83
Electrical Engineering	268	2.47	9.03	5.23
Engineering Exp. Station	36	.33	12.22	7.08
Geology	126	1.16	9.88	5.52
Social Science & Humanities	8,040	73.95	5.63	3.26
Math	316	3.55	12.74	7.38
Mechanical Engineering	291	2.68	9.77	5.66
Metallurgy	41	.38	9.58	5.55
Meteorology	94	.87	13.10	7.59
Mining	21	.19	11.61	6.72
Paleontology (Museum)	26	.24	7.16	4.15
Physical Education	110	1.66	3.58	2.07
Physics	362	3.33	11.84	6.86

made of the tabulation. For example, it suggests one possible answer to a problem which has bothered many librarians who allocate to departments: why have some departments, over the years, consistently not spent the money allotted to them? A frequent answer has been "departmental negligence," but it may sometimes be—as Table 3 shows—that not many books having relevance to their work have been published each year.

The technique is of course not infallible, but if it fails as an argument to controllers of the purse, then the tabulations—number and cost of books—could at least be helpful as two factors in an allocation formula. In this situation, the tabulation could be converted to percentages as in Table 4, and the percentages used as scores. At any rate, it appears clear that such tabulations as these, drawn from *BPR*—or in similar ways from other listings—can serve as one more device to aid library management in the ever-recurrent and knotty problem of determining appropriate book funds and their allocations. ■■

CARRELS . . .

(Continued from page 265)

the students spent ten hours a day or more listening to lectures, participating in seminars, away on field trips, or working in the laboratory, there was little formal studying. Library facilities were practically non-existent, and the students were so worn out learning that they had no time for studying. They considered this program a tremendous learning experience, which they attributed to the availability and proximity of resource people and living in a total marine environment. This was an instance where, to use Marshall McLuhan's[7] apt phrase, environment becomes information with the emphasis on discovery rather than instruction. The students did not read in the context of an environment but explored the environment itself using all the senses and various tools which became extensions of themselves.

In this article the authors are less concerned with this educational philosophy than in making clear the distinction between studying and learning. They question the assumption, made by some, that new trends toward individual learning require the sort of study spaces provided by carrels. To be sure, there is no contrary evidence, but the unclarity of the situation does seem to warrant serious exploration of various methods of learning without unnecessary assumptions about the prerequisites for learning. Clearly a variety of study spaces is required to meet the needs of extroverts as well as introverts, lone studiers as well as group studiers, people who like to type as well as those who want to read in easy chairs. Existing data do not appear to justify placing as much emphasis upon individual study carrels as it is, in some quarters, currently receiving. ■■

[7] Marshall McLuhan, *Understanding Media: The Extensions of Man* (New York: McGraw-Hill, 1965).

JOHN S. GIPSON

"Total Cost" of Acquisitions in a Community College

Total cost has apparently been seldom determined for library operations; yet it would seem to be necessary for deciding whether or not a change is in order. Total costs are herein determined of acquiring a book for use ($4.85) at Macomb County Community College library. The techniques applied are suggested for determining total costs of other library operations and in other locations.

THE PURPOSE of this analysis is to show a methodology for determining the total cost associated with library operations. Quite often, a much lower figure is substituted for total cost due to the complexities in determining total cost. Total cost is not always a popular product because operational costs are generally much larger than anticipated, even when simplified costing techniques are used; less popularity is forthcoming when it is pointed out that the true costs are much higher than the already unexpected high cost. But total cost is an important commodity when planning to modify or implement an operation. It needs to be as accurate as possible for effective planning.

Obviously, to determine properly the total cost of an operation, all costs associated with the operation must be included. Often, for simplification, only the costs apparent to the casual observer are considered. This analysis attempts to consider all the costs associated with the operation. Often such costs are not readily available because of the interactions which occur. Most operational costs can be isolated accurately, however, if the operation is viewed from its proper perspective within the system.

Total cost for an operation can be determined accurately by carefully examining the costs associated with the operation; each operation of the library has the following costs associated with it:

Materials cost
Personnel cost
Equipment cost
Supplies cost
Area cost

These five cost items are simply the costs associated with any operation involving personnel. But each of these items contains some hidden costs which frequently are not considered in cost analysis. A method for isolating and determining the hidden as well as the obvious costs is needed. This analysis represents an effort to formulate such a method.

The method employed is best illustrated by carefully presenting the cost analysis for one specific operation. The Macomb County Community College (MCCC) library has provided the information necessary for such an illustration. The operation chosen for illustration is the incorporation of a volume into the library holdings; the operation of select-

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TABLE 1

COST OF MATERIALS

Volume	cost of volume
LC cards:	
(10¢ for 1st card, 6¢ for each add.; average 6 per vol.)	$.40
Book card	.004
Book pocket	.009
Due date slip	.002
Label (on spine)	
(450 books per roll of 12.50)	.028
Paste, markers, misc.	.007
Total Materials Cost	$.45
	+ cost of volume

ing, acquiring, and processing a volume for the library. That is, the operation which produces a volume on the library shelf ready for circulation.

Materials Cost is the cost for materials consumed in producing the end product. For the illustrative example, the end product is a volume on the library shelf ready for circulation. Examples of materials associated with this product are: the volume itself, LC cards for the volume, book card, book pocket, due date slip, etc. Simple averaging procedures are used to determine the cost per volume for such items. For example, to determine the average number of LC cards per volume, the total number of LC cards in the library is divided by the total number of volumes in the library; the cost of other materials are found in a similar manner. A complete list of these materials including their costs is shown in Table 1.

The procedure used in determining each cost included in the materials cost implies this cost is very accurate.

Personnel Cost is the cost of personnel for the operation. For the illustrative example, this cost is not easily determined, especially as some of the personnel perform more than one operation. The simplest technique for isolating this cost for each employee is to assign a percentage to each employee which corresponds to the fractional amount of his time devoted to this operation; this assigned percentage could then be multiplied by the total cost for the employee, thereby determining the amount of his total cost to include in the personnel cost for this operation. Not only is this the simplest technique, but it is a satisfactory technique when used with due caution and slight modification. Instead of assigning a percentage to each person representing the fractional amount of time he devotes to this operation, assign percentage estimates to each person representing the fractional amount of time he devotes to each of his duties, thereby ac-

TABLE 2

COST OF PERSONNEL

ITEMS:	
Selecting—advertisements, applications, etc.	
Acquiring—interviews, correspondences, etc.	
Processing—employee records, orientation, payroll, sick leave, keys, etc.	
Terminating—closing file, references, etc.	
Benefits—insurance, parking, etc.	
Misc.—personal items areas, lounge areas, eating areas, atmosphere, breakage, pilferage, etc.	
Salary	
COSTS:	
Items 1-4—estimated by the business office to cost 5 per cent of salary for professional and clerical personnel; 2 per cent for student personnel	5 per cent of salary
Item 5—estimated by business office	$225.00
Item 6—estimated at 1 per cent of salary; no estimate available from business office	1 per cent of salary
Item 7	100 per cent of salary
Total	$225.00
	+ 106 per cent of salary
Total Cost for Personnel	$ 3.729 per volume

counting for one hundred per cent of each employee's time. Since these percentage estimates account for all man hours for all employees, they must be assigned so that each operation performed by the library has its appropriate manhours assigned to it. Thus any overestimate for one operation produces an underestimate in some other operation. This may not appear at first glance to increase the accuracy of the percentage estimate for the specific operation under consideration, but it does; because it places restrictions regarding the percentage estimates assigned to each individual for each operation; it also allows objective comparison of the percentage estimates for the different operations which helps to eliminate undue biasing of the estimates. These estimates could be determined more accurately by having each employee keep time work sheets for a period of time; however, if the above procedure is followed carefully and as objectively as possible, it is doubtful if the improvement in accuracy is worth the extra effort, especially for the illustrative example.

There are other costs associated with employees. For example, the cost for the employee's files and paychecks, the cost of employee benefits such as insurance, sick leave, and retirement funds. Also, the costs associated with providing lounging, eating, and parking facilities. A complete list of the details and the cost associated with personnel is shown in Table 2.

The total cost for personnel ($3.729 per vol.) represents the total cost for personnel including all hidden, student, clerical, and professional costs for this operation.

This cost can never be as accurate as other costs, but the cost given is satisfactory. Most likely it is the best possible due to the difficulties in isolating such costs and the built-in checks mentioned above used in determining the percentage estimates for each employee.

Equipment Cost is the cost associated with the furniture and equipment used in performing the operation. For the illustrative example, these costs are calculated by amortizing the cost for each item of furniture and equipment over a *minimum* life expectancy. A minimum life expectancy produces a slightly larger amortized cost than would expected life, but with the rapid changes in modern technology few items are kept even to minimum life expectancy. Thus minimum life expectancy is a more appropriate time for which to amortize costs. Also, since these items cannot be purchased on a prorated basis, there is the cost associated with the initial capital investment; this cost has been included by using 5 per cent simple interest on the capital investment.

The total equipment cost is $.136 per volume.

This cost could be a slight overestimate. Although every effort was made to include each item, some omissions are likely. Thus any overestimate due to the procedure of using the minimum life expectancy is likely to be more than offset by the rapid changing technology and/or possible omissions.

Supplies Cost is the cost associated with the supplies and/or miscellaneous items used in performing the operation. For the illustrative example, this includes postage, small miscellaneous items of equipment, order blanks, paper, pens, envelopes, paper clips, and staples. This cost is not available as such for the example, but is estimated to be $.166 per volume.

This is based on a percentage estimate for this operation multiplied by the total supplies cost for the library.

This cost is likely an overestimate, but this supply cost includes postage and small miscellaneous items of equipment in addition to operational supplies.

Area Cost is the cost associated with occupying an area—the area occupied by the personnel, materials, furniture, and

TABLE 3

TOTAL COST

Total material cost	$ .450
	+ cost of volume
Total personnel cost	3.729
Total equipment cost	.136
Total supplies cost	.166
Total area cost	.364
Total	$4.845
	+ cost of volume

equipment for the operation. For the illustrative example, the area cost is found by determining the floor space occupied by the operation, then prorating the cost of the building, maintenance (janitorial services included), utilities, and capital investment for the occupied floor space. This procedure produces $.364 per volume as the total area cost for this operation.

The procedure employed for determining the area cost suggests this cost is accurate.

With the above total cost for each of the individual cost items, it is easy to determine total cost for the operation of incorporating a volume into the library holdings; the cost is simply the sum of the above five costs. This sum is shown in Table 3.

This last number ($4.845 + cost of volume) represents the total cost for a volume to arrive on the library shelf ready for circulation.

CONCLUSION

The above illustration indicates that it is possible to isolate total cost for what may have originally been considered a rather loosely defined operation which included some hidden costs. Nevertheless, total cost was found using the illustrated method, and it is a good estimate of the total cost for the operation of incorporating a volume in the MCCC library for the fiscal year 1965-66.

As a careful examination of the derivations reveals, it is often more accurate to isolate an individual operational cost by isolating several operational costs simultaneously. Thus, much of the fundamental analysis for other operational costs is available when one operational cost is found by the method illustrated. That is, other operational cost such as circulation cost, periodical cost, or patron cost, can now be found with minimum effort. This is another advantage of using this method to find "Total Cost." ■■

WASYL VERYHA

Problems in Classification of Slavic Books With Library of Congress Classification Schedules

AND SUBJECT HEADINGS

This paper deals with the difficulties which face every librarian cataloging materials on the Slavic peoples. These are caused by inadequate Library of Congress Classification schedules and irrational subject headings. The LC classification schedules on the Slavs have not been brought up to date and therefore do not reflect the real state of affairs. For example, no political changes in Eastern Europe have been taken into account by LC for fifty years. As a result the LC schedules and subject headings for these areas are inconsistent and confused.

The paper attempts to show some of the major inconsistencies of LC Slavic cataloging practice.

THE DEMAND FOR Slavic materials is growing, and more and more North American universities are opening departments of Russian and Slavic studies to satisfy the demand for more and better information about the Slavic nations. The rapid growth of the Soviet Union as a world power on the one hand, and an almost complete ignorance on the part of the Western powers about the Slavs, on the other, are contributing mutually to this expansion. The lack of interest in the Slavs in the past has resulted in universities grabbing anything that has been written about the Soviet Union in Western or Slavic languages, even though the material acquired, sometimes for huge sums of money, is of little value for scholarly research.

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Some universities have established special research centers to study the Soviet Union, its political and economic development, as well as the problem of the national minorities of the USSR. Since most universities are using the Library of Congress classification and subject headings, and catalog librarians are obliged to classify that material within the schedules of the LC classification and its subject headings, their importance can hardly be overestimated. Where LC rules are used, they are usually strictly followed. For the sake of consistency deviation from LC practice is seldom permitted by library authorities.

In performing his duties, however, a librarian must also be honest in the treatment of the material on hand. This honesty to his own conscience as well as to the contents of a book can often be very difficult to attain when using LC classification schedules and subject head-

ings. A few examples may demonstrate this difficulty.

The Soviet Union, as everyone knows, is not a country with a homogeneous population, but a union of fifteen republics and several dozen autonomous republics or regions, which are inhabited by various peoples and nations each with its own past, its own histories, civilizations, and religions. It is true that the Russians are the dominant race—indeed they rule all the minorities within the boundaries of the USSR—but the Soviet Union is not Russia. Yet in the Library of Congress classification and its subject headings the real state of affairs politically and geographically is not reflected. The LC approach to this problem is rather biased in geographical designation and in classification schedules; in addition it is inconsistent. LC converts the official name of the USSR into Russia. By doing so, it in fact creates two Russias, one being the Russian Soviet Federated Socialist Republic which is, in LC, *"Russia (1917- R.S.F.S.R.)"*—which is quite right—and another, *"Russia (1923- U.S.S.R.),"* for the Soviet Union as a political unit—which is quite wrong.

To make this picture clear, it would have been much wiser and more practical to leave *(Russia, 1917- R.S.F.S.R.)* as it is for the designation of the Soviet Russian Republic and to introduce for the whole Soviet Union this very name, or simply to accept the official abbreviation *"USSR"* as a common designation for all the republics, as it is established by Soviet law. The first one would correspond to the name Great Britain, used by LC for the United Kingdom, while the official abbreviation would correspond to the form used for the United States. Consequently with this there should be introduced a classification schedule in all classes, but first of all in the history and the social sciences, doing justice at least to the principal union republics and within them for the corresponding autonomous regions. A good example from the LC schedules, which is elaborated along these lines, is the schedule tables in history for Great Britain. For the United Kingdom there are tables for a common history as a political unity but at the same time there are separate schedules for England, Scotland, Wales, and Ireland. As a matter of fact this has been done even for the Soviet Union, but strangely enough, only for the Asiatic Union Republics in Soviet Central Asia like Kazakhstan, Turkmenistan, Tajikistan, Kirghizstan, and Uzbekistan. Even Siberia has a separate schedule in history, although it is a part of the RSFSR and although its history can hardly be separated from the history of the Russian conquests there, especially since many of the Siberian peoples are even now not well developed.

On the other hand, the Caucasian peoples and republics with their rich and old history, like Georgia or Armenia, do not even have a number but only a so-called "Cutter number." The same could be repeated about the Baltic nations, which only recently—that is before World War II—enjoyed their independence for at least two decades, and like Lithuania, once played an important role in the history of Eastern Europe. It sometimes appears strange that a small republic like San Marino, composed of Italians, should get equal treatment in LC classification schedules with the Baltic states or the Caucasian nations with their ancient and heroic history.

Poland has its own classification schedules for history. However, it is deprived of the very important section where local history and description could be classed. Therefore the Polish history of individual localities or regions is classed within the Austrian, Prussian, or Russian schedules. A history of Warsaw is classed under DK651. W6 along with Russian, Ukrainian, White Russian, and Baltic cities and towns. But the Polish city of Cracow is classed with Austrian history in DB879. K8, and strange as it may be,

a history of the Polish region Podhale in the Carpathian Mountains south of Cracow, is classed next to the Russian Province of Perm in DK511. P58. On the other hand, the history of the Polish Province of Posen is classed with Prussian history in D491. P88.

Similar cases may be cited from the Ukrainian, White Russian, and Baltic nations which do not have separate classification numbers for their local or regional histories. However, there is one exception: the history of the Ukrainian provinces of Galicia and Bukowina are classed with Austrian history. But even these parts are not exempt from the irregularities cited for Poland. A history of Galicia is classed in DK481-500 with Austria, but the Carpathian region (called Huculszczyzna in the LC schedules) which is a part of Galicia, is classed in the Russian classification number DK511. H8, and the Galician capital Lvov is also classed under the same number as Warsaw, Novgorod, or Kaunas. Even the history of Carpatho-Ukraine (formerly Ruthenia) which, after the Second World War was transferred from the Czechoslovak Republic to the Ukrainian Soviet Socialist Republic as Zakarpatskaya oblast, is also classed in Russian local history DK511, although it belonged for centuries to Austria-Hungary. (Polish provinces which for the last half-century have been separated from Prussia are still classed with Prussian history by the Library of Congress.)

This discrepancy of classing of local history and description of Poland, White Russia, Ukraine, and Baltic states, as well as of the Caucasian nations, together with Russian local history is even more pronounced when we take into consideration that each of the Central Asiatic Soviet Republics as well as Siberia, which is a part of the RSFSR, have a provision for their local histories within their own schedules separate from those for Russia.

In a slightly better position than any of the Baltic states but worse than any of the Central Soviet Asiatic republics, are the two largest non-Russian Soviet republics in Europe, which are now members of the United Nations—that is the Ukrainian SSR and the White Russian SSR. These are honored by the LC classification in East European history with one number each, that is DK508 and DK507 respectively, which, however, are in the section in which their history may be classed. The Ukrainian SSR, which is the second largest country in Europe in territory, with a population close to fifty million, and with centuries of history filled with struggles for their independence, has one number. In practice this is only one-tenth as many numbers as are designated for Kirghizstan or Kazakhstan. To make the discrimination even more pronounced, it is sufficient to point out that forty numbers were given for the one Russian city of Leningrad with another ten numbers in spare for eventual expansion.

It is hard to explain how it happened that the multinational state of Imperial Austria, crownlands like Bohemia, Bukovina, Galicia, Moravia, and others were privileged with at least twenty LC numbers each, while the national minorities of the former European part of the Russian Empire, with the exception of Poland, were completely deprived of the same treatment.

Even more biased are the subject headings used by LC, especially in the designation of geographical places, names of smaller cities, provinces, etc. The composition of the Soviet Union with its fifteen Union republics is completely disregarded, and the whole area is treated as Russia. It cannot be explained in terms of "clarity." It is also strange that all the place names in the United States are followed not by the name of the country but by the name of the state in which they are located, for instance: Berkeley, California, or

Akron, Ohio, and so on. The same principle has been used for the place names of Great Britain: Aberdeen, Scotland, Cork, Ireland, Norwich, England and Swansea, Wales. It would seem logical that such a pattern should be applied to the place names and geographical or political regions of the Soviet Union, especially so since the *Columbia Lippincott Gazetteer of the World* always indicates the republic in which places are located. However, in LC lists a different principle has been applied. They not only disregard the information supplied by the *Gazetteer,* but they are also inconsistent in their application. It seems that there is no principle nor clearcut pattern. A few examples from LC practice may be cited.

The Turkmen city of Askhabad is designated as "Askhabad, Russia," as are also the cities Chirchik in Uzbekistan, Komsomolsk-na-Amure in the far east of Siberia, Frunze in Kirghiz SSR, Tuapse which is the coastal city on the Black Sea at the foot of the Caucasus, Yalta on the Crimean peninsula, and Dnepropetrivsk in Ukraine. Even Stanislav and Tarnopol, which only some twenty-five years ago were acquired by the Soviet Union and incorporated into the Ukrainian Republic, are all designated by "Russia."

Again, a city like Alma Ata in Central Asia is designated by the name of the republic, Alma Ata, Kazakhstan, and so is the city Kara-Kum, Turkmenistan. Furthermore, while the city of Komsomolsk-na-Amure is designated as in Russia, the cities which are situated halfway between Komsomolsk and the Ural mountains are designated as in Siberia, *e.g.*: Irkutsk, Siberia; Yeniseisk, Siberia. True, all the cities of Siberia are politically a part of the Russian Soviet Federated Socialist Republic, but in this case all the cities, or rather place names of Siberia should, for the sake of consistency, be designated either by Russia or by Siberia. The same designation should be used consistently for all the place names of a certain region.

But strange as it may be, the capital of the Moldavian Soviet Socialist Republic, Kishinev, is designated neither by the name of the Republic, *i.e.* Moldavia, nor by Russia. LC established it as Kishenev, Bessarabia.

This practice does not facilitate identification of the place nor its location on the map, because the city of Stanislav at the foot of the Carpathian mountains in the Ukrainian Republic is almost a half-world apart from the city of Komsomolsk-na-Amure near Korea. Perhaps this practice could be explained in political terms; namely, that once the Soviet Union is identified by LC as Russia, then Russia is the proper designation for each place name within the boundaries of the USSR. But as has been explained above, LC practice is not consistent and one does not know whether the term Russia is used here in a political or a geographical meaning.

If it is political, then how can the facts be explained that, for instance, the cities of Irkutsk and Yeniseisk, to mention just two, are not designated as being in Russia but rather in Siberia (Irkutsk, Siberia; Yeniseisk, Siberia)? It is worthwhile furthermore to point out that these two mentioned cities, geographically speaking, are much closer to Russia proper than the far eastern city in Siberia, Komsomolsk-na-Amure, which is designated as in Russia. Using the political designation "Russia" would be the proper term to apply to all three of these cities since all of them are within the boundaries of the Russian Soviet Federated Socialist Republic. Following such a principle would be more proper just if the place name Askhabad were followed by the name of the Union republic, *i.e.*, Turkmenistan, and Stanislav by the name of the republic, Ukraine, and so on.

When the terms "Russia" and "Siberia" are used in a geographical sense, it

would be only just and consistent to use "Askhabad, Central Asia"; "Yalta, Crimea"; and "Tuapse, Caucasus," and the reader would be able to locate them on the map without much difficulty, since it is much easier to search a region such as the Caucasian mountains than the entire Soviet Union.

The apparent curiosities and inconsistency of LC practice, although it is supposed to be the world leader in librarianship, do not end here. The names of the Union republics are being used, but in what meaning? Whether they are political or geographical cannot always be explained. There are, for instance, subject headings *Lithuania—Politics and government; Ukraine—Economic conditions; White Russia—History; Labor and laboring classes—Armenia* or *Cities and towns—Azerbaijan,* etc. On this basis it seems that we have to deal with each of the Union republics as a political and geographical unit.

This, however, is not so. A book on the Ukrainian literature of the Carpathian region of Western Ukraine is classified by LC in the Ukrainian literature schedule but with the subject heading: *Ukrainian Literature—Stanislav, Russia (Province).* A book on the labor movement in the White Russian city of Gomel is under the subject heading *Labor and Laboring Classes—Gomel, Russia.* There is a subject heading *Cities and towns* with the name of the Union republic, but a book on a certain city in that republic must be classified under Russia since there is no provision to do otherwise. For instance, a book on the Ukrainian cities or towns of Zakarpatskaya oblast will be listed under the subject heading as follows: *Cities and towns—Russia—Zakarpatskaya oblast.*

If one happens to get a book on the local government of any of the Soviet republics, there is no possibility to class it with the republic because the J Class, which is Political Science, has no provision for it. In all other countries of Europe, of course, there is such provision for every province. Consequently, a librarian is never sure how to deal with a book on hand. Being subjected to an iron rule of consistency, he is forced to proceed in his work, against his best knowledge of the subject and against his own conscience.

The examples of LC inconsistency and the apparent lack of a desire to settle these problems connected with the Soviet republics do not contribute to a high standard of Slavic librarianship. There is a table on page 535 in the classification schedules of H class, Economics, entitled "Notation for subdivision under countries subdivided by their provinces," but even in the latest 1965 edition of the schedule the USSR with its fifteen Union republics did not find its way onto it. Furthermore, in the following "Table of countries in one alphabet" none of the Soviet republics are listed, including the once independent Baltic states. The lack of a clear policy as to the classification of national materials creates confusion even in LC practice. One librarian, for example, classifies material on White Russia under Russia as for any other Russian province, and another librarian may catalog the material on any of the Union republics under the classification number with a notation "All other countries A-Z."

None of the Union republics is listed in any class as a political entity, a unit in itself with its own provinces, cities, industries, etc. Consequently, material on the Union republics is classified and shelved side by side with material on any of its own provinces or the provinces of any other republic if its name happens to begin with the same letter, especially in class H. For example, material on Georgia will be close to material on Gorkovskaya oblast (Russia) on Zabaikalya (Siberia), close to Zakarpatskaya oblast (Ukraine), while material on Ukraine as a whole will be side by side with material on Ufimskaya oblast. While

in all other countries the LC classification follows the principle of descending from the largest unit gradually to the smallest, the classification for Slavic and Soviet countries are exempt from this logical policy.

There also appear to be inconsistencies in LC policy toward the Slavs within the Soviet Union, that is for Slavic minorities under Russian domination. It is a well known fact that the Slavs are geographically divided into three groups: the most numerous are the Eastern Slavs, followed numerically by the Western and Southern Slavs. In the Library of Congress practice this subdivision does not exist. The LC practice and policy recognizes in its use of subject headings only the general name *Slavs* with two more groups, that is *Slavs, Western* and *Slavs, Southern,* and with appropriate references to individual peoples, even to such small groups like the Sorbish and Lusatians situated in eastern Germany. But there is no subject heading for the Eastern group of Slavs. It seems that the Library of Congress does not recognize the Ukrainians and White Russians as separate ethnic groups, or as separate nations. There are many recent titles dealing with the history and civilization of the ancient Eastern Slavs, but there is no classification number for these individual groups especially in class D—History. The librarian handling such material faces a rather perplexing dilemma: what subject heading and classification number should be given to cover the contents of such a book? The subject *Slavs* is too broad and misleading, but there is no proper subject *Slavs, Eastern.* There remains of course another alternative; to classify it under Russia and thus be unfair and dishonest toward the two other nations belonging to the Eastern Slavs.

Thus far this paper has discussed the problems connected with the Union republics of the USSR which do not get proper treatment in Library of Congress classification practice. But this practice does not end on the frontiers of the USSR. Poland, which has enjoyed her independence for the last half a century, with only a short interruption, is still treated by the Library of Congress as a part of Russia. Her provinces are distributed in the classification schedules among her neighbors, notably Russia and Germany, especially in the H—Social Sciences class. This is confusing not only for a librarian but also for a student of Polish economics and social sciences. The LC classification schedule treats Poland like any other Soviet Republic or oblast, and Finland is treated the same way. Thus under economic conditions Poland is listed under the number HC337. which is the number for Russian provinces, with a Cutter number P7. In short, all the numerous books on Polish economics are not being classified but rather, it would be more appropriate to say, are being dumped under one fraction of a number, HC337. P7. Also under the same number in this class and even with the same Cutter is Poltavska oblast of Ukraine HC337. P76. But because fifty years ago it was under Germany the Polish province of Poznan is separated even now from Poland and is classed with Germany in the same way Poland is classed under Russia. Consequently, the material on Polish economics is divided and separated into several parts, just as it is practiced with the same material for any of the Soviet republics. Instead of shelving together all the material on a certain subject for a certain country of East-Central Europe, *i.e.,* for Poland and all the Soviet republics, it is spread in many different places. Polish materials are under Austrian, German and, most of all, under Russian numbers. Ukraine materials are under Russian and Austrian numbers. A similar situation exists with regard to Yugoslavia, where materials dealing with its constituent republics are classed under Austria, Hungary, Serbia, and Turkey.

To sum up: Library of Congress practice which the librarian is often obliged to follow strictly is far from satisfactory. An example is the DK subclass which covers the history of all the Soviet Union, Poland, and Finland; and yet it may be the best of all thirty-one volumes of the LC schedules with the exception of Q, R, and T classes which cover science, medicine and technology. Class H, which covers the economics, and class J for political science are much less satisfactory. The LC subject headings, as has been indicated, are very unsatisfactory. Such inconsistent and inaccurate practice disturbs not only librarians but it also confuses the reader who wants material on a certain country, especially when he is using the stacks. Books covering one country are being dispersed on different shelves, quite often widely separated, when they should be together.

The librarian in his work, instead of being consistent, commits the error of inconsistency to comply with LC practice. A correction of these discrepancies is necessary to improve library services especially for research libraries. Since most of the libraries on the North American continent have only recently begun or are now planning to start the organization of Slavic collections, it would appear desirable for LC to introduce improvements at least as an alternative choice for the new Slavic collections, as it has done in some other cases. The suggested changes could be easily done, as for instance, in the class DK, by developing new schedules for the Union republics on the same pattern as the schedules for Finland. If there were too much material to reclassify, the old single number or a Cutter number could be closed with a reference to the new schedule and from the new schedule to the single number or Cutter number previously used for all older material. There is enough room in the DK subclass, as well as in any other, for eventual expansion. Besides there are many numbers, in the schedules which for all practical purposes, are dead numbers, because there is no material to class in them. This would appear to be the easiest way to bring subject headings up to the present requirements. The sooner it is done, the cheaper will be the cost to the Library of Congress and various university libraries.

Changes and novelties are not easily accepted. The Library of Congress being large is inclined to be conservative, especially in the social sciences, but other changes have been made under the pressure of public opinion. Therefore it would appear that the professional organizations interested in the Slavic world, such as the Canadian Association of Slavists, the Slavic subsection in ACRL, as well as organizations of Slavic scholars, should consider presenting a brief to the Library of Congress with a request that it amend obvious inconsistencies in its subject heading practice and provide logical and consistent classification in its schedules. A way to do it would be to appoint a special joint committee from learned societies which would elaborate the discussed section of the LC classification and present it to the authorities of the Library of Congress for their approval and eventual inclusion in their schedules for general use.

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Book Reviews

A Bibliography of Illinois Imprints, 1814-1858. By Cecil K. Byrd, Chicago: The University of Chicago Press, 1966. xxv, 601 p. $12.50 (65-24423).

This is a successful and important addition to the growing list of bibliographies of early state imprints which are essential to an understanding of the role played by the printing press. Mr. Byrd has chosen to follow the plan laid out by Douglas C. McMurtrie for recording post-1800 imprints by state rather than the wholesale approach used by Charles Evans for the seventeenth and eighteenth centuries. McMurtrie began by identifying the early press and imprints of each locality; out of this grew that great mass of raw material found in the mimeographed *American Imprint Inventory* lists. From these and other studies have been prepared a number of bibliographies of the imprints of individual states, the most recent of which was McCorison's *Vermont Imprints*. Thus far bibliographers have avoided the great printing centers of Boston, New York, and Philadelphia.

Using the conventional chronological arrangement, the author has endeavored to include all products of "native" Illinois presses, excepting certain state documents printed principally for the use of legislators, blank forms, and similar ephemera. The descriptions are a sensible compromise between short-title listings and detailed descriptions. Enough information is given to identify the item and determine the completeness of a copy in hand. However, Mr. Byrd's modest statement, "editorial comments occur when it was thought that the title, its subject matter, its author was important enough to merit historical or biographical elaboration," fails to warn the user to a significant contribution to this kind of bibliography. There are in fact only a few entries which do not receive the benefit of Byrd's editorial comments. Some run to as much as a half a page. The information he provides makes it possible to place each item in its time and place in the history of Illinois. The book becomes immensely more useful for both the casual user checking one imprint and for the historian who is surveying this period of the state's history. This is facilitated by the full index which contains not only names of people but also those of organizations. This is particularly important because so many of the items have corporate entries.

Mr. Byrd has followed the principle of recording only those imprints which he felt "reasonably certain still exist," and has omitted titles to which he found references but for which no copies could be located. He is quite frank about the collections which he was unable to inspect. Thus when one of those collections is given as a location, the user is alerted to the fact that the item was not actually seen. It is clear that Mr. Byrd's failure to see these items was not from want of effort on his part. The one, minor, bothersome point is the treatment of the location of copies. Although in many cases two or three locations are given, a large number of entries have only one. Are these items really as scarce as this would suggest at first glance?

In the Introduction is a useful breakdown of the number of items issued each year in each town. The largest number were either government publications or religious texts. One is tempted to make a comparison with the output of the first thirty-five years of the Massachusetts, New York, or Pennsylvania presses.

Although the "not in Byrd" game can now begin, the basis for the history of printing in this vital state is now firmly anchored.—*Thomas R. Adams, John Carter Brown library, Brown University.*

Library Statistics: A Handbook of Concepts, Definitions, and Terminology. Ed. by Joel Williams. Chicago, Illinois: ALA, 1966. 166p. $5.50 (66-22724).

"The principal objective of this handbook is the standardization of concepts, definitions, and terminology for the several basic types of libraries." How well this has been achieved can only be determined by the application and use of the content. There

can be no question of the need for such a volume, and the cooperative approach provided by the ALA Statistics Coordinating Project should encourage general acceptance and use. Hopefully, as noted by Frank Schick in the foreword, "it may well prove the basis for an international standard for library statistics. . . ."

The volume is organized with an opening chapter on General Concepts, followed by chapters on Statistics of College and University Libraries, Statistics of State Library Agencies, Statistics of School Libraries, Statistics of Special Libraries, and Statistics of Library Education. Each is written by a specialist in the field.

The chapter on Statistics of College and University Libraries was prepared by Marietta Chicorel, whose interest in this field is further represented by an article in *CRL* for January, 1966 (Marietta Chicorel, "Statistics and Standards for College and University Libraries," *CRL*, XXVII [January 1966], 19-22). It is suggested that a reading of this article will provide a background for understanding some of the recommendations made. While there may be some disagreement over decisions reached, for instance in the matter of using the physical volume rather than the bibliographical unit as the basis for count, we are at least provided with a clear statement on this and other items normally asked for in statistical reports. There also seems to be reasonable consistency in the definitions and principles among the chapters on Public Libraries, College and University Libraries, and Special Libraries.

A glossary of terms is provided and is generally based on the *ALA Glossary of Library Terms*.

In order that the volume be representative of a broad spectrum, arrangements were made for a series of four regional conferences involving more than one hundred and sixty librarians. My only quarrel with the accuracy of the volume came for obvious reasons on page 148 where I found Mildred C. Langner, medical librarian of the University of Miami, identified in a similar capacity with the University of Mississippi!

Joel Williams, director of the Statistics Coordinating Project, his staff and the Advisory Committee are to be congratulated upon the successful preparation of a very useful volume.—*Archie McNeal, University of Miami.*

Computer Filing of Index, Bibliographic, and Catalog Entries. By Theodore C. Hines and Jessica L. Harris. Newark: Bro-Dart Foundation, 1966. ix + 126 pp. (66-23484).

The purpose of this book is to develop a code for computer or hand filing of library, catalog, bibliographic, or index entries in a divided arrangement wherein authors, titles, and subjects are to be in separate alphabets. The authors assume "that filing should be a purely mechanical routine of handling entries whose written form actually determines their relative positions." In other words, the cataloger or indexer prepares the entry for filing, and the computer does a simple, mechanical sorting into alphabetical order.

However, the computer has far greater capabilities for filing than the mere ability to sort alphabetically catalog or index entries manually prepared for such a sorting. Use of a computer as a mere sorting machine wastes much of its power, for the computer can relieve the cataloger or indexer of most of the work involved in setting up the entry for filing. For instance, the authors recommend that catalogers and indexers omit initial articles in the nominative case from title entries, but it is perfectly feasible to have the computer ignore these articles in mechanically preparing entries for filing; the article appears in the printed product, but was ignored in the alphabeting procedure.

It is customary in sorting records with a computer to have the computer edit the category in the record under which the record is to be filed. The computer is instructed to edit appropriate characters and set them up in a special sort field. The sort program then operates on this field.

In setting up sort-field characters, the computer can alter original data in any way desired, providing that each character is always changed with the same algorithm. The algorithm may be quite complex and relate a given character with other elements so that in one circumstance it may be edited in one way and in another circumstance in

quite a different manner. For instance, a diaeresis over an "o" in an English language title would be dropped out of the sort control, but when the computer detected a diaeresis and on checking the language indication field found that the title was in German, it would then place an "e" after the character over which the diaeresis occurred. With relatively few exceptions—perhaps one half of one per cent of entries—a computer can arrange bibliographic entries according to present library filing systems without human intervention.

In part, the proposed code does not succeed because it is not viewed as a segment in a comprehensive library system. It is only with the design of a machine-readable cataloging record to serve throughout libraries that work should be undertaken on a machineable filing code. Even then characteristics of the machine must not be allowed to impose themselves on the code; rather, the objectives of the code should be firmly established and then the machine invoked to meet those objectives. Of course, the biggest obstacle to constructing an effective new filing code—either machineable or manual—is that there are no adequate data to define the objectives of a filing arrangement. Much research needs to be done to attain understanding of how users use catalogs and indexes before thought should be given to construction, much less acceptance, of a new filing code.

The sum total of the book, however, is to propose a new filing code differing from existing codes. The differences are not great, and no evidence is presented to justify changes made from the present code. It seems unwise to invoke such a change without a clear demonstration of its benefit. Indeed, the proposed change involves greater human intervention in filing than would the computerization of present filing practices. Any increase in human intervention, such as manually preparing an entry for filing, diminishes the advantage of the machine. The code proposed in this book has been needlessly subjected to unnecessary machine restriction, and can be considered only as a departure from the old position; it is not a start in the right direction.—*Frederick G. Kilgour, Yale University.*

A Plan for Indexing the Periodical Literature of Nursing. By Vern Pings. With an introductory chapter by Ellwynne M. Vreeland. New York: The American Nurses' Foundation Inc. 1966. xii, 202p. (66-29223).

The proclaimed need for serious research in the library field together with the criticism now leveled at the superficial studies which have been dignified by that title are symptoms of our growing professional sophistication. A research report such as this done in 1964 by Vern Pings for the American Nurses' Foundation proves that the "working" librarian is capable of analytic examination of his field. The papers which make up the bulk of this report begin with a study of the growth of nursing as a profession in terms of its formal communication needs, continuing to a detailed study of the characteristics of the articles on nursing and their present bibliographical control, culminating in a formal series of plans for an index to this subject field.

Despite the specificity of the subject investigated, Dr. Pings' volume is of general interest to reference librarians; library educators can use it as a teaching model, and it will serve other librarians contemplating similar studies as a planning guide.

Each paper is formally organized, beginning with statements of hypotheses, description of study methods, findings, conclusions, and summary; extensive tables and appendices reinforce or demonstrate the points made. Chapters 3 and 4 which contain the analysis of the MEDLARS (Medical Literature Analysis and Retrieval System) coverage of nursing give a clear account of MeSH (Medical Subject Headings) and the problems and inconsistencies which can frustrate the unwary user of *Index Medicus*. Conventionally, each chapter is accompanied by a good bibliography; the extensive one on nursing libraries in Chapter 9 of over three hundred items covering the years 1903-1963 is especially impressive.

The plans proposed by Dr. Pings for an index with broad geographic coverage and special subject headings but based on the already available MEDLARS foundation were closely followed in the new *Interna-*

tional Nursing Index (v. 1, 1967) prepared by the National Library of Medicine and published by the American Journal of Nursing Company. When *INI* is studied by the historians of the future, Dr. Pings' *Plan* will be often blessed for the information it contains on the personal and administrative interactions between the several nursing associations and the National Library of Medicine.

To criticize Dr. Pings' prose as structurally involved and barren of lightness is valid, but hardly fair; the papers were written to be used as working tools by a committee, not for publication in monographic form.—*Joan Titley, University of Louisville.*

Librarianship in the Developing Countries. By Lester Asheim. Urbana: University of Illinois Press, 1966. 95p. (66-29774).

Here are ninety-five pages of sage counsel, born of great experience, for the American librarian who is called upon to advise the library industries in developing nations. Constituting the 1966 Windsor Lectures in Librarianship at the University of Illinois, these three brief essays are entitled "Some Parallels and Contrasts," "Some Overarching Problems," and "The Role of Librarianship." They of course draw heavily upon the author's wisdom and the store of understanding of his subject which Dr. Asheim has built up during his five busy years as director of ALA's International Relations Office.

In his first lecture Dr. Asheim warns of the Culture Shock often experienced by extroverted, reader-oriented American librarians when they meet their first case in another society of "the philosophy of primacy of the book over the reader." Seek first within the setting where it is found the reasons for such a philosophy before condemning it out of hand, he urges. Must our rightness, he wonders, be assumed in all situations? Must the way we do things apply universally? Perhaps; but he admonishes that we reply affirmatively only after much searching contemplation of a complex of historical, social, physical, and cultural factors which are often overlooked.

In his second essay, the author points specifically to some such factors. These include the aristocratic tradition that exists in many developing lands; it often makes untenable such an ideal as universal education. Another influence which is often more important elsewhere than it is in our own society is "deference to age, authority, and the past." Out of these two factors alone comes a range of special problems for library management which are related to colonialism and class privilege, civil service, red tape, and strong attachment to the status quo. There are, of course, economic and psychological factors which must be pondered, including problems of illiteracy and neo-literacy, outmoded teaching method, manpower shortages, and the prestige or the lack of prestige of librarianship, and there are such physical problems as climate, undernourishment, and geography. Again we must ask if *our* answers are valid in view of *these* problems?

The concluding lecture asks how we can help, as well as such harder questions as whether or not anyone really wants the help we offer. What of the strings and implications for the recipient that so often accompany our help? How can we help to educate without encouraging the great "brain drain" from developing countries? Also, he observes, the very existence of United States and other national information libraries in developing countries reinforces "the suspicion that a public library . . . is a special-interest, brain-washing agency rather than an institution of disinterested education." The basic question to which Dr. Asheim's deliberations lead him, however, is "what exactly do we in America have to offer the developing nations that will help them to generate the kinds of libraries, librarians, and library services best suited to their needs and their aspirations?" This is a tough question, but he does well at approaching a whole congeries of provocative answers before he concludes, and his answers have far-reaching significance and implication.

Every librarian heading for an overseas assignment should be denied his visa until he memorizes this little book *verbatim ac litteratim;* it is that important. It will also be darned good reading for those of us who stay home.—*D.K.*

Das Bibliothekswesen in der Sowjetischen Besatzungszone Deutschlands. By Martin Thilo. (Bonner Berichte aus Mittel- und Ostdeutschland). Bonn/Berlin: Bundesministerium für Gesamtdeutsche Fragen, 1965. 243p.

"In the future (library) holdings may be increased only by literature purchased in bookstores authorized in the German Democratic Republic. The acquisition of used books is not authorized regardless of whether they are lent or presented as gifts. The loan, sale, or any other form of disposal of literature removed from holdings is not authorized. . . . The German Democratic Republic is a truly democratic state . . ." (pp. 238, 186).

These two excerpts from official East German pronouncements presented in the book are symptomatic of promulgations and practice by which not only the average inhabitant of the "zone," but also, of course, professional people, in this case, librarians, continuously are harassed and badgered.

A revision of the edition of 1964, this West German official publication devotes more attention to certain individual zonal libraries, training of personnel, and comparative statistics. The author's intention was to provide a kind of "documentary" by quoting pertinent professional journals, functionaries, or official regulations of the Soviet Occupation Zone in Germany (as indicated in the title, the author consistently refers to East Germany as SBZ—Soviet Occupation Zone—SOZ) and thus letting the facts speak for themselves. He succeeds, although the style, suffering at times from repetitiousness, poor organization, and prolix sentences, may bubble into a bibliopolical bouillabaisse.

Some 179 pages of text are supplemented by 59 pages of appendices containing zonal edicts concerning libraries. There is also a list of sources.

Through experience with the "Third Reich," Germans are, the author says, aware of the extent to which libraries may be misused as a political tool. From the beginning of the zonal occupation the model of the USSR has been unmistakable. In that country libraries are an important factor in public life and receive strong, official support. Lenin's statement to the effect that libraries are an index to the condition of culture is frequently quoted in the SOZ. Accordingly the role of books, reading, and public libraries as moulders of attitudes is highly esteemed and frequently overestimated.

Continuing, the author states that although initially all libraries were directed by a centralized administration emphasizing general accessibility to the public and the "great, common task of influencing our people" (p. 11), by 1951 the professional libraries were reorganized under the state secretariat for universities, while public libraries were placed in 1954 under the ministry of culture.

Among professional libraries in the SOZ the Deutsche Bücherei in Leipzig and the Deutsche Staatsbibliothek in Berlin are treated in some detail. The first, with some three million books, still collects all books printed in Germany and German language publications and translations of German publications produced abroad. It is also a special repository for German music, art, and patent literature, as well as German literary phonograph records. The author points out that the Deutsche Bücherei can fulfill its function of collecting all books produced by German publishers only if certain requirements are met. One prerequisite, that each publisher furnish copies of his books, has been generally complied with. However this relationship will be jeopardized if: (1) books from West Germany are not made accessible to the public in the Leipzig Deutsche Bücherei; and, (2) if this library does not discontinue the practice of supplying incomplete and therefore inaccurate information in its "abbreviated" bibliographies, examples of which political coloration are offered (p. 27).

Comparably, the Deutsche Staatsbibliothek with holdings of two million titles also collects German publications and foreign literature. It has a special medical collection and publishes a number of bibliographies. Another specialty is Soviet and satellite country scientific literature. Finally, this library specializes in union cataloging.

Among specialized libraries the Thüringische Landesbibliothek in Weimar is mentioned. With six hundred thousand volumes

this institution has a large collection of older works from the period of German classicism.

Other types of libraries discussed are general, technical, specialized, peoples, district, rural, labor union, school, "Pioneer House," and children's. As to children's libraries the writer remarks that the obvious goal is to indoctrinate the child as early as possible and quotes: "We must exploit all available means and resources to develop our holdings in such a manner that they attain maximum effectiveness, *i.e.*, that they are active helpers in the training and education of our children as socialist personalities" (p. 101). ("Socialist" is of course the common euphemism for "communist.")

Commenting on labor union libraries, Dr. Thilo quotes statements which somehow have a familiar ring: "Labor unions have a particularly noble task of bringing the book to the masses via the factory library which is worthy of the great goal of serving as schools for socialism . . ." (p. 108). In a similar vein he cites further:

> To increase the knowledge of workers concerning the problems . . . of socialism, they are to be familiarized particularly with the works of marxism and leninism. By belletristic literature in which the establishment of socialism in our republic, in the Soviet Union, and the other countries of the socialist camp is presented artistically, their ties to and love for their socialist home are strengthened. They are spurred on to new work achievements in socialist competition.
>
> To educate the workers to awareness and hatred of the enemies of peace and socialism, to increase their class consciousness and their willingness to defend the power of the workers and farmers and our socialist achievements, literature must be presented which unmasks the criminal machinations and objectives of the imperialists and militarists. To this end that literature which tells of the revolutionary struggles of the working class in the past and present and particularly of the antifascist resistance is of great significance (p. 231).

Considerable history of the vicissitudes of the zonal library system is incorporated in the exposition. Thus losses, dislocation, confiscation, proscription, and denazification of holdings due to war and occupation are discussed. However, unlike measures undertaken in the West, says the author, denazification was never consistently carried out in the SOZ. Likewise the SOZ has never dared to promulgate a complete, definitive list of proscribed books, but rather prefers ambiguous declarations. Particularly from the viewpoint of a librarian the consequences may be uncertainty, confusion, and frustration. In addition to his regular duties, a librarian in the SOZ must belong to and participate in various party organizations, many of whose evening meetings make heavy demands upon his time. Training programs for library personnel are organized along practical, technical, and political lines. Thus, the "socialist library system" is subjected to continuous official pressure for "improvement" of holdings in the face of restrictions imposed concerning party-approved books and personnel.

Some people in the West may think that zonal party policies do not affect professional libraries. This is not true, continues Dr. Thilo. Let no one imagine that zonal authorities regard the professional libraries as oases of pure science immune to politics. In fact, there are functionaries who are primarily party flunkies in every professional library of the SOZ. Due to their positions they exercise a decisive influence on the operations of libraries.

One ray of light in this bleak picture according to the author is the functioning, at least formally, of interlibrary loan between the Federal Republic and the SOZ. Without denying some technical improvement in SOZ libraries, the author stresses the fact that according to his sources of information any such changes are dictated first and foremost by zonal politics.

Finally, he says, it is difficult to perceive how any meaningful cooperation can be worked out between West German and SOZ libraries as long as walls, barbed wire, and mine fields constitute a "frontier" through Germany and around Berlin.

This book affords a rather penetrating analysis of the history and development of zonal libraries. It is also a perceptive indictment of fetters on the minds of men.—*Wayne Wonderley, University of Kentucky.*

■■

EUGENE P. SHEEHY

Selected Reference Books of 1966-67

THIS ARTICLE continues the semi-annual series[1] originally edited by Constance M. Winchell. Though it appears under a byline the list is actually a project of the reference department of the Columbia University libraries, and notes are signed with the initials of the individual staff members.[2]

Since the purpose of the list is to present a selection of recent scholarly and foreign works of interest to reference workers in university libraries it does not pretend to be either well-balanced or comprehensive. Code numbers (such as AD34, DB79) have been used to refer to titles in the *Guide to Reference Books*.[3]

GUIDE

Winchell, Constance Mabel. *Guide to Reference Books.* 8th ed. Chicago: ALA, 1967. 741p.

What a pleasure it is to note the appearance of the 8th edition of the *Guide!* Judicious selection, a slightly smaller type size for the entries, and a somewhat fuller page have combined to keep the nearly eight thousand items within the convenient single volume format. A new classification scheme has been developed for this edition, grouping the items in five main sections: A, General reference works; B, Humanities; C, Social sciences; D, History; and E, Pure and applied science. Each section has numerous subdivisions, and the major subsections, in turn, have their distinctive letter prefixes (*e.g.*, AA, Bibliography; AB, Librarianship; BA, Philosophy; BB, Religion). Most items are annotated, and the annotations meet the high standard one has come to expect in the *Guide. Indexing, too, is up* to expectations in its thoroughness. In short, Miss Winchell leaves the field with colors flying.—E.S.

BOOK SELECTION

Books for College Libraries. Chicago: ALA, 1967. 1056p.

Sub-title: A selected list of approximately 53,400 titles based on the initial selection made for the University of California's New Campuses Program and selected with the assistance of college teachers, librarians and other advisers. Prepared under the direction of Melvin J. Voight and Joseph H. Treyz.

This long retrospective list of monographs, intended as a new selection aid for college libraries, was compiled by specialists who chose each title on its own merits with the over-all design of building a balanced library collection to support basic undergraduate courses in all fields. Subject coverage, consequently, is wide, and both scholastic and recreational interests were considered. No imprints later than 1963 are listed and, although perhaps a third of the books are out of print, this information is not noted in the entry. No periodicals, newspapers or films are included. Arrangement is by Library of Congress classification with closely related classes grouped; within each section, entry is alphabetic by author. Complete bibliographical information plus the LC card number is given; price is omitted. There is a complete author index, and another index for major subjects.—R.K.

DIRECTORY

Little, Arthur D., Inc. *Directory of Selected Research Institutes in Eastern Europe.* Prep. for the National Science Foundation. New York: Columbia Univ. Pr., 1967. 445p. $12.

[1] *CRL,* January and July issues starting January, 1952.

[2] Linda Benson, Marilyn Goldstein, Rita Keckeissen, Evelyn Lauer, Barbara Railo, Charlotte Smith.

[3] Constance M. Winchell, *Guide to Reference Books* (8th ed.; Chicago: ALA, 1967).

Although this directory was originally meant to cover only institutes in the areas of the biological and physical sciences, information volunteered by various East European agencies led to the inclusion of certain other fields as varied as architecture, linguistics, and social insurance. Emphasis, of course, is clearly on scientific research institutes in Bulgaria, Czechoslovakia, Hungary, Poland, Rumania, and Yugoslavia. Arrangement is by country, with the official name of the institute followed by an English translation of the name, the address, director's name, and notes on the major activities of the institute. Indexes of directors' names, names of institutes (including abbreviations), and of subjects complete the work.—E.S.

Encyclopedia

Brockhaus Enzyklopädie in zwanzig Bänden. 17. völlig neubearb. Aufl. des Grossen Brockhaus. Wiesbaden: Brockhaus, 1966- . v.1- . DM79 per v.
Contents: v.1, A-Ate.

A change of title and expanded coverage are the features which first claim attention in the new edition of this standard work. Indeed, the twenty-volume format promises to bring the range of coverage back to that of the 15th edition *(Brockhaus' Konversations-Lexikon).* Spot checking of the first volume indicates that, while many of the shorter articles are unchanged from the 16th edition (published 1952-57 in 12v.; *Guide* AD34), some have been augmented or rewritten, and there are, of course, many new entries. Numerous long articles such as those on countries and continents evidence considerable reworking and updating. Bibliographies appear to have been given particular attention, with emphasis placed on recently published works. Color plates and maps are new, but a surprising number of the black and white illustrations are carried over from earlier editions. Good paper and sharper reproduction, however, make for a highly satisfactory appearance. The publisher estimates a total of two hundred and twenty-five thousand articles in sixteen thousand pages for the completed work.—E.S.

Periodicals & Newspapers

Fowler, Maureen J. *Guides to Scientific Periodicals; annotated bibliography.* [London]: Library Association, [1966]. 84*s.*

This long list (1048 entries) is designed as an aid in selection and use of periodicals, and in identification and verification. "Guides" includes all types of publication: bibliographies, union lists, library catalogs, organization directories that list periodicals, national or other bibliographies which include periodicals as well as monographs. Consequently, "scientific" in the title is somewhat misleading, for many lists of much wider coverage are given. The specialized subject division of the first section is, of course, limited to science. Entries are grouped in three sections: universal guides, national and regional guides, and guides to periodicals of international organizations, this last a list of only six items. Full bibliographical information is given, and for the most useful items annotations are quite detailed. There is a long author-title-subject index.—R.K.

Index to Commonwealth Little Magazines. [v.1-], 1964/65- . New York: Johnson Reprint Corp., 1966- . Biennial. (v.1, 187p. $7.50)

Stephen H. Goode, editor.

Indexing of "little magazines" has heretofore been largely confined to those American publications covered by the now well established *Index to Little Magazines* (*Guide* AF132). Mr. Goode, who recently undertook retroactive indexing of American "littles," now promises biennial volumes of this new index devoted to "a selected list of English-language little magazines published in Commonwealth and ex-Commonwealth countries." (Pref.) Patterned after the American series, the new index covers thirty-four magazines, but unfortunately some are indexed only for 1965, and the volume numbers are not indicated in the list of periodicals indexed. The compiler plans retroactive indexing of these Commonwealth publications.—E.S.

Stanford University. Hoover Institution on War, Revolution, and Peace. *Soviet and*

Russian Newspapers at the Hoover Institution, a Catalog. Comp. by Karol Maichel. [Stanford, Calif.]: 1966. 235p. $6.50. (Hoover Institution bibliographical series, no. 24)

The purpose of this catalog is to list the holdings of one of the best collections of Russian imperial, Soviet, and emigré newspapers in the United States. According to the editor, however, only 85 per cent of the actual holdings are listed, owing to the difficulty of classifying some materials as newspapers or as journals. Borderline materials will be included in a forthcoming catalog of Russian periodicals at the Hoover Institution.

Arranged alphabetically by title (or, where several newspapers have the same title, alphabetically by place of publication) the catalog notes changes of title, misnumbering or suppression of issues, etc. A slightly confusing practice of sometimes listing holdings, sometimes only missing issues, and at other times both the available and missing issues detracts from really easy use of the volume. Wherever possible the entries include reference to additional bibliographic sources. Since two of the compendia thus referred to are Library of Congress and Columbia University library catalogs of Russian newspapers, we have here a checklist of the holdings of three major libraries for the titles mentioned.—E.L.

Willing's European Press Guide. Issue 1- , 1966/67- . London: Hutchinson Willing Ltd., 1966- . Annual. (v.1, 732p. £5, 5*s*.)

This new annual is designed as a companion volume to *Willing's Press Guide* (*Guide* AF50), now in its 92d year. The latter will continue to list newspapers and journals of the United Kingdom, Northern Ireland and the Irish Republic, and the new guide will list those of the western countries of continental Europe: Austria, Belgium, Denmark, France, Germany, Italy, Netherlands, Norway, Portugal, Sweden, and Switzerland. Following the plan of the earlier guide, material is presented in an alphabetical, classified list, with four separate language indexes providing a more specific subject breakdown. Some thirty-four thousand newspapers and magazines are listed; information is limited to name and address, publisher, frequency, and price.—C.S.

Dissertations

Canada. Public Archives. *Register of Post-Graduate Dissertations in Progress in History and Related Subjects.* Compiled by the Public Archives of Canada and published by the Canadian Historical Association. No.1- , 1966- . [Ottawa, 1966-]. Annual.

A classified list with an author index, the *Register* will be a continuation of the list of theses formerly published in the *Canadian Historical Review*. Included will be all theses (at both the master's and the doctoral level) which are in preparation in departments of history at Canadian universities, plus those in the departments of political science, economics, geography, etc., "if they involve some degree of historical research" (Foreword). Theses being prepared at foreign universities dealing with Canadian history, government, and politics are also included. Only works in progress are listed.—C.S.

Biography

Bonacker, Wilhelm. *Kartenmacher aller Länder und Zeiten.* Stuttgart: A. Hiersemann, 1966. 244p.

Brief biographical information on those individuals of all places and periods (including the present), who have been involved in the creation and production of maps is presented in this volume. Wherever possible, birth and death dates, locale and sphere of activities are given, and reference is made to standard biographical sources where further information may be found. Arrangement is alphabetical, and there are ample cross references from the variant spellings of many cartographers' names. The work will be useful primarily for purposes of simple identification.—E.L.

McGraw-Hill Modern Men of Science; 426 Leading Contemporary Scientists. Presented by the editors of the McGraw-Hill Encyclopedia of Science and Technology.

New York: McGraw-Hill, [1966]. 620p. il. $19.50.

Addressed chiefly to teachers and students of high school and college, this alphabetical directory of important scientists, the great majority of them still living, is a companion volume to the publisher's *Encyclopedia of Science and Technology* (*Guide* EA86), which excludes biographical articles. Entries average about a thousand words, and give essential biographic data and description of achievements against their scientific background. Most accounts were written by the scientists themselves; others were submitted to them for review and correction. An index of all persons and subjects referred to in the text, and a list of all the scientists arranged by field are useful reference features. Cross reference is made to *Encyclopedia* articles for fuller information on subjects mentioned.—R.K.

Philosophy

The Encyclopedia of Philosophy. Ed. by Paul Edwards. New York: Macmillan, [1967]. 8v. $219.50.

Not since J. M. Baldwin's *Dictionary of Psychology and Philosophy* (1901; *Guide* BA26) has there been a major English-language reference work in the field of philosophy. This gap has now been filled by the eight-volume *Encyclopedia of Philosophy.* Unlike Baldwin's dictionary, the encyclopedia treats its topics at length, and emphasizes individual thinkers (to whom are devoted over nine hundred of the fifteen hundred articles). Claiming as their domain all of philosophy—Eastern and Western, ancient, medieval, and modern—and related disciplines, the editors have recruited over five hundred eminent contributors from all over the world.

Those articles not dealing with individual thinkers are concerned with controversial philosophical issues and the history of various fields of philosophical endeavor. A detailed index and copious cross references help to eliminate the duplication which necessarily results from an alphabetical arrangement, especially one which discusses the philosophy of a man in one entry and the historical significance of his theories in another. The signed articles are quite readable, intended for specialist and nonspecialist alike, and are accompanied by bibliographies of varying length. The bibliographies appended to the survey articles are especially valuable as guides to the study of the development of an issue or a subfield of philosophy.—L.B.

Koren, Henry J. *Research in Philosophy; a bibliographical introduction to philosophy and a few suggestions for dissertations.* Pittsburgh: Duquesne Univ. Pr. [1966] 203p. $3.95.

Another of the "guides to the literature," this work is intended to introduce graduate students in philosophy to the bibliographical tools and sources of their field. The classified arrangement supplemented by name and subject matter indices is characteristic of such guides, but Koren's volume has the distinction of being a pioneer work for this discipline. The choice of titles in this selective list appears at times to emphasize type rather than value, with annotations generally provided only for the outstanding tools. The general sections of the book (the introductions and definitions) seem too elementary for graduate students, but the section on bibliographical tools is quite well done. It covers forty pages, and treats bibliographies of general philosophy, related fields, branches of philosophy, trends of thought, periods, language areas, countries, and individual philosophers.—L.B.

The Philosopher's Index; an international index to philosophical periodicals. v.1, no.1- , Spring, 1967- . Bowling Green, Ohio: Bowling Green Univ., 1967- . Quarterly. $8.50 yr.

Many of the seventy-six periodicals indexed by the *Philosopher's Index* are also covered by the more comprehensive *Répertoire bibliographique de la philosophie* (*Guide* BA14), but the former has the advantage of promptness: it appears quarterly rather than annually. Approximately two-thirds of the titles are British and American, and French titles predominate among the remaining third, so it is not quite the international index claimed in the subtitle. Periodicals were chosen by an editorial board of six academicians acting on the recommendations of an advisory board at

Bowling Green. The list is limited and selective, and the resulting index is not large. Produced by electronic data processing equipment, the subject index utilizes a keyword system supplemented, where necessary, by entry under a subject which is implicit in the article rather than explicit in the title. The author index is separate, but full bibliographical information is provided each time an article is cited. No mention of cumulations has been made in this first issue.—L.B.

Religion

Bible. English. King James Version. *The New Scofield Reference Bible; with introductions, annotations, subject chain references, and such word changes in the text as will help the reader.* New York: Oxford University Press, 1967. 1392p., 192p. maps. $7.25.

A revision by a group of nine scholars (with E. Schuyler English as chairman) of the *Scofield Reference Bible* of 1909 and 1917, this edition presents the Authorized text with certain word changes made to clarify meaning for contemporary readers. Such substitutions are shown clearly, and the King James Version word given in a note. The reference aspect of the book is enhanced by several features: indication of pronunciation of difficult proper names; index to annotations; index to the chain references which identify all biblical verses concerning a particular doctrine; and, most important, a concordance to proper names, subject and key words compiled especially for this revision.—R.K.

New Catholic Encyclopedia. Prepared by an editorial staff at the Catholic University of America. New York: McGraw-Hill, [1967], 15v. il. $500; $450 to libraries.

Subtitle: An international work of reference on the teachings, history, organization, and activities of the Catholic Church, and on all institutions, religions, philosophies, and scientific and cultural developments affecting the Catholic Church from its beginning to the present.

This welcome encyclopedia "proposes to meet the need for an authoritative work of reference for the English-speaking world" (Pref.) for the fields named in the subtitle. It is not a revision of the *Catholic Encyclopedia,* 1907-14 (*Guide* BB201), but a completely new work with an impressive international roster of some forty-eight hundred contributors. Because articles deal with the life of the Church in its total environment, entries on persons, institutions, religions, philosophies, scientific developments and intellectual movements of importance enlarge the expected scope of the work.

Coverage is through the close of "Vatican II" and the work reflects the Council's ecumenical outlook and interests as well as twentieth-century advances in scholarship, particularly in scripture, liturgy, patrology, and theology. Articles are signed; most carry concise bibliographies, but for important subjects there are extended lists of references (*e.g.,* that for St. Augustine runs to a full column). Cross references are used liberally, drawing together related materials that appear in different articles. Volume 15 contains lists of editors, consultants and contributors, lists of abbreviations, and the analytic index of three hundred and fifty thousand entries. The page is of well designed, two-column format with enough variation in typeface to make headings, subdivisions and book titles readily discernible. The wealth of well chosen and beautifully reproduced illustrations (seventy-five hundred of them) is an attractive feature. The work should be in every sizable reference collection.—R.K.

Linguistics

Dulong, Gaston. *Bibliographie linguistique du Canada français.* Paris: Klincksieck, 1966. 166p. $6.

Including most of the entries from the *Bibliographie du parler français au Canada* of J. Geddes and A. Rivard (published 1906), this bibliographical guide expands the earlier work by updating material through 1965. The first of a planned comprehensive series on the language and literature of this region, this volume includes citations to many kinds of material to mirror the French Canadian in the light of his speech. Scope is international, and includes books, theses, manuscripts, and periodical articles. Chronologically arranged, entries

are consecutively numbered, and most are annotated. An excellent historical summary makes up the introduction. Author and subject indexes complete this useful bibliography for linguist and historian.—M.G.

LITERATURE

Goethe-Wörterbuch. Hrsg. von der Deutschen Akademie der Wissenschaften zu Berlin, der Akademie der Wissenschaften zu Göttingen, und der Heidelberger Akademie der Wissenschaften. Stuttgart: W. Kohlhammer Verlag, 1966- . v.1, lfg.1- . $7.25 per Lfg.

Contents: Lfg.1, A-abrufen.

From the first fascicle of this work it is already evident that it will be a contribution of enormous value to Goethe scholarship. Listing all words used by Goethe except personal names, it serves as both a dictionary and a concordance, giving definitions, etymology, and synonyms, as well as quotations from the literature to show where the words were used. Citations to scholarly works and quotations from non-Goethe literature related to the term under discussion frequently appear at the end of the articles. The editors estimate that the completed dictionary (which has been in preparation for twenty years and is almost half finished) will consist of five volumes.—E.L.

Kosch, Wilhelm. *Deutsches Literatur-Lexikon.* 3., völlig neu bearb. Aufl., hrsg. von Bruno Berger und Heinz Rupp. Bern: Francke, 1966- . Lfg. 1- . DM20 per Lfg.

Contents: Lfg.1, Aal-Banchini-Brunner.

When completed, the latest edition of this respected work will run to eight volumes, twice the size of the previous edition (1947-58; *Guide* BD576). The one-volume condensation which appeared in 1963 had eliminated entries for subjects, first lines, quotations, and place names, and the present edition continues this policy by limiting entries to the authors and anonymous works of all eras in the German-speaking area. Neo-Latin writers are included, as are literary historians, essayists, philosophers, and historians. Individual entries, however, have been expanded, and list as many related primary and secondary sources as possible. Many users will undoubtedly find the elimination of entries for the categories mentioned above a loss, but the greater depth of coverage in other areas is compensation enough to continue to make this a staple reference source.—E.L.

McCready, Warren T. *Bibliografía temática de estudios sobre el teatro español antiguo.* Toronto: Univ. of Toronto Pr. [1966] 445p. $12.50.

Devoted to the Spanish theater from its inception in the Middle Ages to the end of the "golden age" (*ca.*1750), this subject bibliography lists books and periodical articles published from 1850 to 1950. Over eight hundred periodicals in twelve languages were gleaned for its compilation. Mr. McCready has chosen a rather complex arrangement. The prevailing chronological arrangement is subdivided within each period into general works and works on individual authors. These sections are further subdivided by form of the study, *i.e.*, article or book. Articles are arranged by key word subject system; books alphabetically by author's name. One wonders whether this complexity is necessary. Elaborate cross referencing and an author index should, however, add to the usability of the bibliography. The compiler has certainly endeavored to include as much information as possible: citations to reviews of books are provided, and the list of periodicals indexed is keyed to indicate the library in which the publication was consulted and the items (by number) in the bibliography which appear in the periodical.—L.B.

Stratman, Carl Joseph. *Bibliography of English Printed Tragedy, 1565-1900.* Carbondale: Southern Illinois Univ. Pr., 1966. 843p. $15.

Here is a biblographical tool primarily devoted to English tragedy, covering all works whose first editions were printed between 1565 and 1900 in England, Scotland, and Ireland. (The main exclusion, understandably, is a listing of Shakespeare's tragedies, although adaptations of these plays are cited.) It may be viewed in part as a continuation of the author's *Bibliography*

of Medieval Drama (*Guide* BD134), which has a large section devoted to England. Consecutively numbered entries are arranged alphabetically by author or anonymous title, with pagination, and any pertinent notes or comment; *e.g.*, reference to reviews and unpublished dissertations. There are cross references, a chronological table, and a title index, plus lists of locations for collections, anthologies, and extant manuscripts. In short, this is a comprehensive work of prime value to the literary scholar and dramatic historian.—M.G.

Wright, Lyle H. *American Fiction, 1876-1900*. San Marino, Calif.: Huntington Library, 1966. 683p. $15.

A companion to the author's previous volumes covering 1774-1850 and 1851-1875 (*Guide* BD246, BD247), this new work also serves as a bibliographical guide rather than a fully descriptive bibliography. The scope is similar: books for adults by American authors which were printed in the United States. Entries are arranged by author or anonymous title, and give locations among fifteen American libraries. Some citations include brief notes; titles within collections are given separately and collectively; and the title index includes these analytics. The usefulness of this work is great, though it would have been desirable that the second and third volumes in the series had chronological indexes such as is found in the 1774-1850 volume.—M.G.

Social Science

Ebony. *The Negro Handbook*. Chicago: Johnson Publishing Co., 1966. 535p. $10.

Documenting the Negro's present-day status on a wide range of subjects of a sociological, political, economic, and cultural nature, this is basically a fact-book with much statistical and directory-type information. Arranged topically, the sections of the handbook contain a variety of short articles, tables (with sources indicated), chronologies, lists, and directories. Of note is the inclusion of a biographical dictionary of major contemporary personalities, and an annotated list of major works on the Negro arranged by topic. A comprehensive subject index concludes this handy summary of the Negro today. It is a useful parallel and complement to *The American Negro Reference Book* edited by John Davis.—M.G.

International Bibliography of Studies on Alcohol. Mark Keller, ed. New Brunswick, N.J.: Rutgers Center of Alcohol Studies, 1966- . v.1- .

Contents: v.1, References, 1901-1950, prep. by Sarah Spock Jordy. 631p. $40.

Alcohol literature has always been widely scattered over various disciplines, ranging from the sociological and legal to the medical and psychological. This volume is the first of a bibliographical series which will try to gather together all pertinent material in order to facilitate research and avoid unnecessary duplication. The second volume, in preparation, will provide the author and subject indexes to this one, which is an author list arranged by year. These are to be followed by decennial supplements. Thus far the editors have relied heavily on printed and previously compiled bibliographies, making for a certain admitted overemphasis on well-documented areas. Format is clear, with the authors' names in boldface and the item numbers easily identifiable. A large amount of material has been listed here, and if the indexing is done well it should prove to be an invaluable bibliographic aid.—B.R.

Atlas

Odyssey World Atlas. New York: Odyssey Books, 1966. 317p. 42cm. $19.95.

A completely new reference atlas, this volume contains 169 maps arranged to give a view of world patterns, followed by coverage of the continental areas. Except for the sections devoted to the world and to North America, "the sequence of presentation is always parallel: first a map showing physical features, then political regional maps, and finally a series of thematic maps which depict selected patterns of man and his regional setting." (Introd.) North America is covered in more detail than the other continents. New Zealand is treated as part of Oceania, with separate maps being provided for Australia, the Pacific and Indian

Oceans, the Atlantic Ocean, and the Polar regions. Official spelling of place names is used throughout, and there is an index of one hundred and five thousand place names. While it does not contain as much gazeteer information as the Rand McNally and Hammond atlases, the maps have a higher degree of legibility. This is due to the large page size, the separation of political and relief maps, the omission of detailed road and railroad information, and to the fact that no attempt has been made to standardize the scale.—C.S.

History

American Heritage. *The American Heritage Pictorial Atlas of United States History,* by the editors of American Heritage. New York: American Heritage Pub. Co., 1966. il. 424p. $16.50.

Advertised as the first thoroughgoing American atlas since Paullin's *Atlas of the Historical Geography of the United States* (*Guide* DB79), this work is said to contain 210 newly-commissioned maps in color, 150 historical illustrations and maps, and sixty thousand words of narrative. Chronologically arranged, the maps and text trace the evolution of the North American continent from glacial times to the present, with sociological as well as historical and geographical data included.

Maps and pictures are handsomely reproduced, and the narrative is by well known writers. It is, however, a more superficial work than Paullin, the map explanations being somewhat oversimplified. Except for material on the period from World War II to present, the work contains little information that cannot be found in Paullin or in Lord's *Historical Atlas of the United States* (*Guide* DB78). Indeed, there are various omissions, such as maps showing changes of wealth distribution, growth of organized labor, and information on politics. The perspective views of famous battles and of nineteenth-century cities are more decorative than informative.—C.S.

Duignan, Peter. *Handbook of American Resources for African Studies.* [Stanford, Calif.]: Hoover Institution on War, Revolution, and Peace, Stanford University, 1967. 218p. (Hoover Institution bibliographical series no. 29)

Offered as a first attempt to describe American resources for African studies, this work goes well beyond the scope of Duignan and Collins' *Americans in Africa* (*Guide* DD3) which concerned itself with records and papers of Americans who visited Africa. Describing library and manuscript collections, church and missionary archives, art and ethnographic collections (and including a list of private United States collectors), and some business archives, the *Handbook* intends to call attention to the whole range of African resources and "to encourage utilization of the scattered but rich materials held by various American institutions and museums." (Pref.) Most of the information was derived from questionnaires, and entries vary from a few lines to several pages. There is a very extensive section on U.S. National Archives resources. Fully indexed.—E.S.

An Encyclopaedia of New Zealand. A. H. McLintock, ed. Wellington: R. E. Owen, 1966. 3v. il. £7, 10*s*.

Despite an obvious nationalism, this government sanctioned encyclopedia manages to present a many-faceted view of New Zealand. Its 359 contributors have produced eighteen hundred general articles and half as many biographies. While an alphabetical arrangement has been chosen, cross referencing, broad article headings, and an index of over twenty thousand entries help to tie together similar materials scattered throughout the volumes. The articles are very readable and are illustrated with maps, black and white photographs, line drawings, and diagrams. Bibliographies do not accompany the majority of the articles. The encyclopedia seems strongest in discussions of zoological and botanical species native to New Zealand, and in biographies. Very few living people are represented, as the editor intended the biographies to illustrate the glory and the history of New Zealand.—L.B.

Muller, C. F. J. *A Select Bibliography of South African History.* Pretoria: Univ. of South Africa, 1966. 215p. R 3.50.

The first attempt at a comprehensive guide for historical research on South African history, this selective bibliography cites about twenty-five hundred titles, primarily scholarly books published throughout the world, but including some periodical articles and unpublished essays and theses. There are three main sections: the first is concerned with such aids to research as bibliographies, historical atlases, and general histories; the second, arranged by period, surveys the field chronologically from the beginnings up to the present; and the third and longest part is arranged by subject, covering the humanities, social sciences, and sciences. Entries are numbered consecutively and are given by author or other main entry within sections; author and name indexes conclude the work. The value of this compilation to the scholar and historian is undeniable; it is hoped that in future, anticipated supplemental annotations might be included.—M.G.

Pennsylvania University Library. *The Maclure Collection of French Revolutionary Materials.* Ed. by James D. Hardy, Jr., John H. Jensen, and Martin Wolfe. Philadelphia: Univ. of Pennsylvania Pr., [1966]. 456p. $50.

This catalog serves both to identify and locate items for the historian, and substitutes for conventional cataloging of this rich subject collection of primary materials at the University of Pennsylvania. The collection consists of 1,460 bound volumes containing twenty-five thousand items grouped by subject. The catalog lists and describes the volumes in numerical order. For serials, title, dates, notation of indexes, and useful descriptive annotations appear; for pamphlet volumes, author (often only a surname), full title, date, and paging are given. Indexes of authors, committees, and commissions are appended. Two interesting essays by John J. Jensen, one on French Revolution collections in the United States, the other on the Maclure collector and collection, precede the main list.—R.K.

Tauro, Alberto. *Diccionario enciclopédico del Perú.* [Lima]: Editorial Mejía Baca, [1967]. 3v. il. $88.

Names and terms relating to Peruvian life, culture, and history are dealt with in this compilation. There are a great many biographical sketches (including some of living persons), numerous entries for place names, educational and cultural institutions, and extensive coverage of the flora and fauna of Peru. In addition, terms borrowed from or peculiar to the native races of the country are well represented, so that the work should prove useful to the historian and the anthropologist alike. Articles are generally brief and, unfortunately, there are no bibliographies or lists of sources.—E.S. ■■

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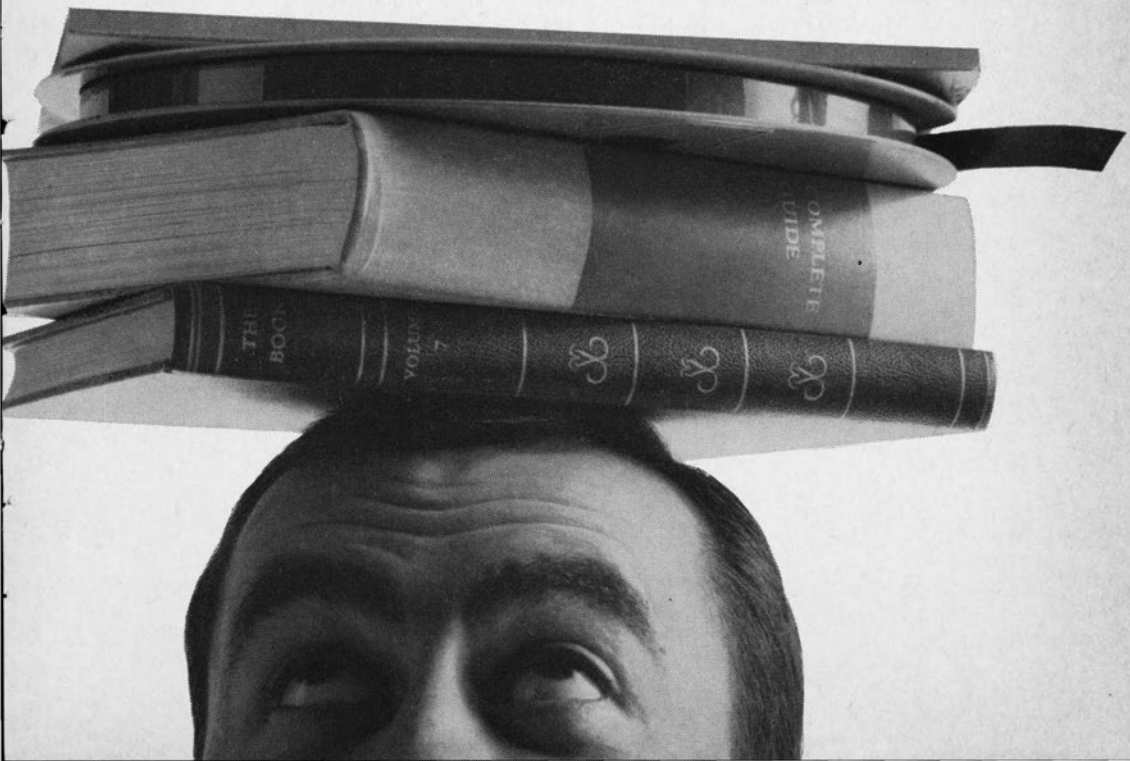

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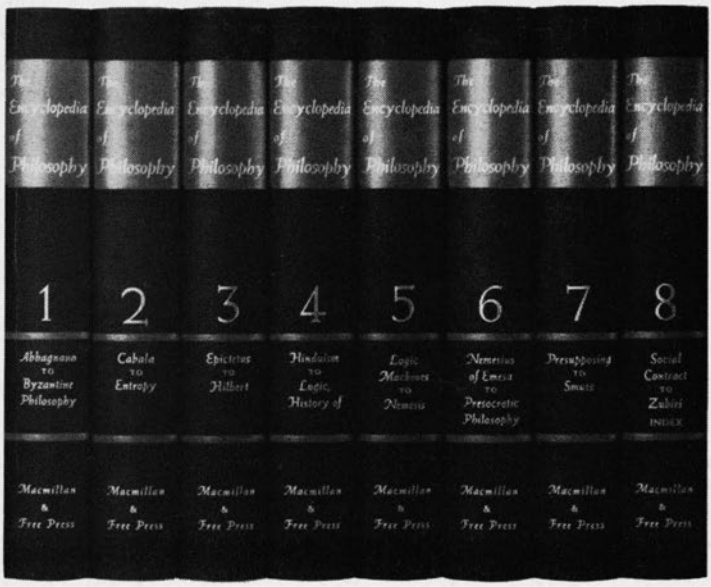

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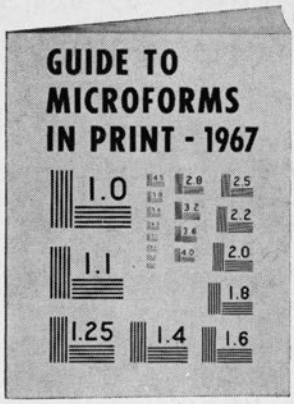

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